

JUPITER: DEVELOPMENT ASPECTS - DEPLOYMENT (Unclassified)

VOLUME I: TEXT

Ву

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An Indication of Jupiter Accuracy	•		•	•								facing p. 29
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#### PREFACE

Historians of other commands have presented the impact of the Jupiter weapon system on their missions. This study, however, is an attempt to consolidate some of Jupiter's many facets-development and production, operational planning, and deployment efforts--and follow the Jupiter through the installation and checkout program.

To assist the reader in finding references to the many decisions leading to installation and checkout, the writer has deviated from the normal course of presentation by developing a rather detailed chronology and putting it in the text. The combined efforts of several writers have made this chronology possible. For the early developments leading to the initial production of the Jupiter, the writer has leaned heavily on Akens' Historical Origins of the George C. Marshall Space Flight Center. For the second period, beginning with the Jupiter's transfer from the U. S. Army to its ultimate assignment to this headquarters, the author used two excellent chronologies prepared by Miss Ethel DeHaven, Historian, Office of the Deputy Commander, Air Force Systems Command for Acrospace Systems. To these individuals--Mr. David S. Akens and Miss Ethel DeHaven--the writer is deeply indepted. Other entries were extracted from the supporting documents. The files located in the SM-78 Weapon Support System Management

Division were excellent sources for entries. It is hoped that this chronology will serve a meaningful purpose to those who are seeking a terse summary of decisions in the Jupiter program.

A second purpose of this study is to describe the weapon system management organization used by the Air Force in deploying the Jupiter. To the weapon system manager this might appear redundant. Yet on the other hand, as one writer expressed it, "at any given point in history, current policy is forged in the twin fires of conflicting ideology and technological change." Concerning technological changes and our ability to establish management organizations to cope with those changes, it becomes increasingly important for us to record for ourselves and for posterity the way we did what we did and why we did it. Therefore, the purpose of the supporting document collection is evident. The reader is encouraged to use the supporting documents for solutions to problems not presented in the text.

After the signing of the Country-to-Country and Air Forceto-Air Force agreements, the intricate plans of deployment, construction, and installation and checkout started to take shape.

Naturally, problems arose that affected these plans. But officials
were able to put solutions into effect. It is hoped that the

Wilbur E. Clemmer, Supervising Historian, Historical Division, in History of the Air Materiel Command/Air Force Logistics Command (1 July - 30 June 1961) p. 1. MOAMA Hist. Archives.

lessons learned in this deployment program can help in similar projects.

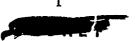
The writer is grateful for the patience and willingness expressed by Marlin Adair and Neil Matheson of the SM-78

Division for their efforts to explain the many technical problems to the writer's satisfaction.



## CHAPTER I: A JUPITER CHRONOLOGY

8 November 1955	Department of Defense made the decision to establish an IRBM Program to achieve early shipboard and land-based capability. <sup>1</sup>
20 September 1956	A Jupiter C missile attained an altitude of 680 miles and a range in excess of 3,300 miles. <sup>2</sup>
26 November 1956	Decision was made by Secretary of Defense Wilson to give the Air Force sole operational responsibility for employment of land-based IRBM's of over 200-mile range.
14 December 1956	The ABMA Liaison Office at Western Development Division (later known as the Air Force Ballistic Missiles Division) requested the Air Force to furnish operational concepts and military characteristics for USAF IRBM's. Information was furnished on 16 April 1957, after W. D. D. received permission from Department of the Air Force to release it.
1 March 1957	Jupiter Missile 1A, the first R & D missile, was fired at the Atlantic Missile Range. It broke up after 74 seconds of flight. Causeoverheating in the tail section.
26 April 1957	Jupiter Missile 1B fired at AMR. Breakup occurred after 93 seconds of flight. Cause propellant sloshing.
31 May 1957	Jupiter Missile 1 was successfully fired at AMR to a range of over 1400 nautical miles. This successful firing revealed that use of the anti-sloshing baffles had solved the propellant sloshing problem. 7
8 August 1957	A Jupiter C, launched at Cape Canaveral, reached an altitude of 600 miles and a range of over 1,200 miles.8





13 August 1957	Secretary of Defense directed that fund commitments in excess of the production rate of one Jupiter per month through CY 1959 be suspended or cancelled. Also, overtime at ABMA and its contractors involved be held to three per cent. 9
28 August 1957	Jupiter Missile 2 was fired from AMR. Separation of the body and thrust unit, programmed for the first time, and all other missions were accomplished.10
15 October 1957	The Director of Guided Missiles authorized the ABMA to develop and complete the Jupiter Missile Program. Restrictions on personnal and overtime were lifted and production limited to two missiles per month. 11
23 October 1957	Air Force Ballistic Missiles Division (AFBMD) Project Office established. 12
27 November 1957	The Office of the Secretary of Defense advised the Secretary of the Army and the Secretary of the Air Force of its decision to proceed with the production and deployment, under Air Force control, of the Thor and Jupiter systems. 13
4 December 1957	Jupiter Task Group established at BMC.14
1 January 1958	The 864th Strategic Missile Squadron activated. 15
6 January 1958	A Department of the Air Force Memorandum to the Secretary of the Army, dated 6 January 1958, established a requirement for a Joint Air Force-Army Agreement for the Jupiter program. 16
20 January 1958	Headquarters USAF conference convened to develop on Interservice Agreement. 17
3 February 1958	Headquarters USAF assigned the executive management responsibility of the Jupiter program to the Air Materiel Command. A Jupiter weapon system project office was established at AMC/BMO on 12 February 1958.18





11 February 1958

A Logistics Planning Conference convened at ABMA. 19

12 February 1958

Joint Tenancy Agreement at ABMA. 20

12 February 1958

A Jupiter WSPO established at BMC. 21

27 February 1958

Headquarters, AMC assigned the Logistics Support Manager responsibilities to Commander, MOAMA.<sup>22</sup>

21 March 1958

Commander, AMC, by AMC General Order No. 26, dated 21 March 1958, established the Air Force Jupiter Liaison Office (AFJUPLO or AF JUPLO) at ABMA, Redstone Arsenal, Huntsville, Alabama, effective 1 March 1958. 23

27 March 1958

Department of the Air Force recommended to the Secretary of Defense the feasibility of considering Alaska as an alternate location for the Jupiter if NATO agreements failed to materialize. The Air Force also recommended a slippage in deployment date for the first squadron from December 1958 to February 1959.

1 April 1958

AFBMD established an European Field Office. 25

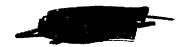
7 May 1958

Headquarters, USAF, rescinded the DOD directive, dated 27 November 1957, that reduced the Jupiter program from four to three squadrons. Further, the units would be NATO units and manned with NATO personnel. Deployment of the first squadron was rescheduled; initial increment of five missiles in place by December 1958. The squadron would be completely deployed by February 1959. The other squadrons+-second and third--to be deployed by February 1960. France was identified as the host country. 26

9 May 1958

The Office of the Secretary of Defense authorized the Air Force to proceed with base preparations in Alaska for one Jupiter/Thor squadron. Action in this area continued until 18 September 1958, when the Air Force received instructions to hold the Alaskan actions in abeyance, pending the status of new negotiations underway with Italy. 27





18 May 1958

Jupiter Missile No. 5 launched at 1205 hrs., E.S.T. from Patrick Air Force Base. This missile was equipped with the first tactical type re-entry nose cone. 28

1 July 1958

Transfer of logistics and industrial operations functions from AFJUPLO to MOAMA. 29

17 July 1958

First completely guided Jupiter launched from Cape Canaveral at 0405 hrs., E.S.T.30

22 August 1958

Headquarters, USAF, furnished guidance for planning purposes for deploying two Jupiter squadrons to Italy. 31

30 August 1958

The Air Force, in a message to all concerned, stated the authorization and guide lines to be used for Air Force negotiations with Italy for that country's receipt of two Jupiter squadrons. 32

12 September 1958

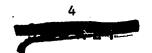
Hq USAFE message AFOOP 57123 dated 12 September 58 directs Hq SAC to amend the SM-78 Jupiter Operational Plan to reflect the AF concept for the first Jupiter squadron; that is, two launch positions of three missiles each rather than six separate launch sites with a second standby missile. Hq SAC message DPLBC 3533 dtd 26 September 58 spells out recommendations for time phasing of the first Jupiter squadron to achieve their full operational capability. Hq USAF message AFOOP-ST 50554 dtd 5 Nov 58 concurs with SAC recommendations. Revised SAC OP 1-58 dtd 29 Oct 58 reflects this position. 33

24 September 1958

USAFE Support Squadron (Jupiter): Hq USAFE letter dtd 19 Sep 58, Subj: Support for Jupiter IRBM Squadron (U), and Hq USAF Message AFPMP 58821 dtd 27 Sep 58, Subj: Requirements of 7230th Support Squadron (U), furnish USAF guidance to USAFE for activation and manning of that organization. 34

'3 October 1958

AFJUPLO message ORDAB-W-MCV-2-10-23-E dtd 3 Oct 58 established the requirement for a major command conference at AFJUPLO on





13-14 Oct for purposes of defining relationships and responsibilities of all Air Force commands and agencies concerned with Jupiter NATO deployments. This conference was conducted at AFJUPLO on 13-14 Oct 58. A Jupiter Program command responsibility paper was developed and forwarded to Hq USAF on 31 Oct 58 for approval. Air Staff approval is still pending. 35

4 October 1958

Jupiter Planning Guidance, Hq USAF: Hq USAF message AFCOM 59083 dated 3 October 58, subj: Jupiter Operational Training provides USAF guidance in several areas to all major commands concerned with the Jupiter Program. This guidance is presented as answers to questions posed to Hq USAF by these AF activities. 36 Jupiter FY-59 2nd qtr Fund Requirements: FY-59 2nd qtr fund requirements for the Jupiter Program. AFJUPLO Message ORDAB-WP-NCV-2-10-34-E dtd 6 Oct 58 to Hq USAF lists the fund requirements for 2nd qtr FY-59.

6 October 1958

USAFE Intra-Command Jupiter responsibilities: Hq USAFE message, DCBM 8RM 2336 dtd 2 Oct 58 quoted to BMC by AFJUPLO message ORDAB-W-TS-5805-E dtd 6 Oct 58, contains recommendations of delineation of overseas command responsibilities for support of the Jupiter program. AFJUPLO message ORDAB-W-TS-5805-E dtd 6 Oct 58 downgraded to SECRET by ORDAB-W-LBG-4-10-155-E dtd 29 Oct 58.

7 October 1958

Jupiter Mobility: Hq USAF message AFOOP-ST-59146 dated 7 Oct 58 to all concerned deletes the tactical mobility requirements from the Jupiter Weapons System. 38

7-10 October 1958

Jupiter Development Engineering Inspection and Contractor Compliance Technical Inspection: AFJUPLO message ORDAB-W-MONP-7-53-E dtd 11 Jul 58 notified interested commands of the Jupiter DEI/CTCI inspection on Jupiter Prototype tactical ground support equipment that would be conducted at Redstone Arsenal, Alabama on 7-10 Oct 58. This event was held as scheduled, and a total of 79 Request for Alterations (RFA's) were submitted by AF representatives attending, of which 27 were approved, 20 placed in a





study category and 32 disapproved by RFA Board. 39

8 October 1958

Jupiter Combat Training Launch Program; Hq USAFE message DCBM 852A dtd 7 Oct 58 to Hq USAF presents that commands comments on Jupiter CTL Program for NATO Jupiter equipped units.

8 October 1958

Jupiter Training Reprogramming Conference: Hq ATC message ATTOT-MB 0422 dtd 7 Oct 58 to all concerned established conference date and ground rules for Jupiter Training Reprogramming Conference necessary to realign that program for NATO personnel inputs.

Results of this conference appear in ATC document, Subj: Jupiter Individual Training Reprogramming Conference Report 28 Oct - 7 Nov 58, Control No. ATOBM 58-35.41

8 October 1958

USAFE IRBM Responsibilities: USAFE Jupiter Command responsibilities Hq USAFE message DCBM 886 dtd 8 Oct 58 to Hq USAF restates that commands responsibility as USAF single point of contact in Europe and its relationship with other commands concerned. 42

9 October 1958

Jupiter Surface Transportation: USAFE message MTPP 40749 dtd 9 Oct 58 to all concerned established basic surface transportation responsibilities in support of Jupiter deployments. AF and Army agencies overseas are identified. 43

14 October 1958

ABMA/MOAMA Agreement on transfer of Logistics Functions. 44

16 October 1958

Jupiter Funding Policy: AFJUPLO message ORDAB-WP-LBG-4-10-7100E dtd 16 Oct 58 to MBC states and questions Jupiter funding policies established by AFABF Hq USAF. 45

16 October 1958

SM-78 Program Plan (Jupiter) SACPP 29-58; Hq SAC published a Jupiter Program Plan for the deployment of the 864th SMS. This plan outlines the responsibilities of each of the SAC Staff Directorates in implementation of the reference deployment program.





20 October 1958

Jupiter Deployment Site: Hq USAFE message DCBM 986 dtd 20 October 58 to all concerned identifies the deployment site for the second Jupiter Squadron. Additional information is contained in USAFE message DCBM 1150 dtd 3 Nov 58. Sites are Gioia Del Colle/Bari for the first Jupiter squadron and Foggia/Gina Lisa for the second squadron.

23 October 1958

Jupiter Funding Channels: Hq AMD message MCCBB 10-29-CM dtd 22 Oct 58 to BMC & MOAMA establishes funding channels for support of the Jupiter Program. 48

23 October 1958

Jupiter Materiel Accountability: Ha AMC message MCFML 3291 dtd 23 Oct 58 which quotes Hq USAF message AFMMS-OP-PC 59736 dtd 16 Oct 58 identifies ground rules for transfer of Jupiter Materiel accountability from USAF ownership to MAPPOM. 49

24 October 1958

Jupiter Design and Construction Program for First Jupiter Squadron: Hq SHAPE message ALO 1004 dtd 24 Oct 58 to all concerned summarizes the austere facilities design and construction program costs and construction schedule for the deployment site of first Jupiter Squadron. 50

24 October 1958

Deployment Guidance for 864th SMS: Hq USAF message AFOCD 50053 dtd 24 Oct 58 to all concerned confirms deployment of the 864th SMS to commence in Dec 58. This guidance was amended by Hq USAF message AFCGM 50627 dtd 6 Nov 58, referenced below. 51

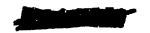
28 October 1958

Jupiter Deployment Plan: Hg USAFE message DCB 1080 dtd 28 Oct 58 to all concerned rebuts Hq USAF guidance on deployment of 864th SMS until government-to-government agreements and MAAG/MOD agreements have been consummated.

29 October 1958

SAC Operational Plan - Jupiter SM-78 (Revised): Hq SAC published and revised Jupiter Operational Plan on 29 Oct 58. This Plan supersedes the SAC SM-78 (Jupiter) Operational Plan SACOP 1-58 dtd 4 Mar 58.53





1 November 1958

Long Range Objectives Plan Jupiter 1-58: First Missile Division Plans Directorate has published a Long Range Objective Plan for Jupiters specifying that units role in the Jupiter Program, publication date was 1 Nov 58, Control No. A58-828.54

5 November 1958

Interservice agreement signed. 55

6 November 1958

Jupiter Deployment: Hq USAF message AFCGM 50627 dtd 6 Nov 58 to all concerned supersedes previous USAF guidance of deployment of the first Jupiter squadron and deleted the Dec 58 - Feb 59 deployment schedule with X-day being the date government-to-government agreement with recipient host country consummated.56

7 November 1958

Funding Jupiter P-400 Requirements: AFJUPLO message ORDAB-WP-LBG-4-11-24 E dtd 7 Nov 58 to commands concerned implements AMC P-400 funding policy.<sup>57</sup>

12 November 1958

Deletion of Tactical Mobility: Hq USAF message AFCVC 50791 dtd 12 Nov 58 to all concerned provides additional guidance on deletion of tactical mobility from Jupiter squadrons. Original deletion was contained in Hq USAF message AFOOP-ST-59146 dtd 7 Oct 58.58

13 November 1958

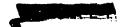
Delayed Deployment of the First Jupiter Squadron: Hq USAF message AFXPD 50811 dtd 13 Nov 58 provides additional guidelines for delayed deployment of the first Jupiter squadron. Original information was reflected in Hq USAF message AFCGM 50627 dtd 6 Nov 58.59

18 November 1958

Jupiter (SM-78) Interservice Agreement (AFOOP 71970): Hq USAF published the approved Joint USA-USAF Interservice Agreement on 18 Nov 58. This Agreement has been in Air Staff and Army coordination since Jan 58.60

24 November 1958

Transfer of Certain Logistics Functions: Comdr ABMA message ORDAB-SJ-82-11-58 dtd 24 Nov 58 to AMC and others spells out the transfer of certain logistics functions and





responsibilities in support of the Jupiter weapon system from ABMA to MOAMA. MOAMA message MOBE-12-22-E dtd 19 Dec 58 outlines MOAMA concept of operation for implementing their logistic responsibilities. 61

29 November 1958

FY-59, -60 Funding for Jupiter: Hq USAF message AFCVC 51482 dtd 29 Nov 58 to all concerned identifies the amounts of monies in the AF budget for a three squadron Jupiter program. 62

3 Sovember 1958

Jupiter Missiles Weapon System Management: MOAMA message MOF-11-73-E dtd 28 Nov 58 to all concerned advises of the establishment of a Jupiter Weapon System Division within MOAMA to handle Jupiter logistical responsibilities. 63

1 December 1958

SAC Deployment Plan (Personnel) for 864th SMS: Hq SAC has published and made distribution on the personnel deployment plan for the 864th Strategic Missile Squadron into the overseas area. 64

3 December 1958

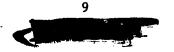
Cancellation of Command Control Console: AFJUPLO message ORDAB-W-MONP-12-12-E dtd 3 Dec 58 advises of decision to delete the requirement for the command control console and data transmission system for the Jupiter system.65

4 December 1958

Jupiter Combat Launch Training Program:
Hq USAF message AFCCS 51664 dtd 4 Dec
58 to all concerned reaffirms Hq USAF
decision to conduct Jupiter CTL at the
Atlantic Missile Range and desire Hq
ARDC as the responsible command to
program and fund for facilities and
support for the CTL program based upon
USAFE requirements.66

4 December 1958

Redesignation of 864th SMS: Hq USAF message AFOOP-ST-51643 dtd 4 Dec 58 states that the 864th SMS will be redesignated the 864th Technical Training Squadron effective 18 Jan 59.67





4 December 1958

BMC/AFBMD Operational Plan 1-58 (Revised): Proposed revision of AFBMD Ops Plan 1-59 dtd 1 Mar 58 has been accomplished jointly by BMC/AFBMD. Major revisions are the removal of all Jupiter technical responsibilities from the BMETO and establishment of a Jupiter Field Office MOAMA/USAFE on the Continent.68

4 December 1958

Planning Data for Jupiter Program Deployment Schedule: Hq USAF message AFCGM 51685 dtd 4 Dec 58 recommends a revised Jupiter deployment schedule and requests comments from commands concerned. This schedule ties in deployment of 864th with the expected construction program in Italy based on a consummated government-togovernment agreement by 1 Jan 59, and deployment of 864th can slip on month-to-month basis until 1 Mar 59 without causing any slip in the other two squadrons. Schedule reflects launch emplacement completion as follows: 864th - Apr 59/1, May 59/2, Jun 59/3, July 59/3, Aug 59/3, Sep 59/3

864th - Apr 59/1, May 59/2, Jun 59/3, July 59/3, Aug 59/3, Sep 59/3
865th - Oct 59/1, Nov 59/2, Dec 59/3, Jan 60/3, Feb 60/3, Mar 60/3
866th - Apr 60/1, May 60/2, Jun 60/3, Jul 60/3, Aug 60/3, Sep 60/3<sup>69</sup>

10 December 1958

Jupiter Facility Construction Program: Hq SHAPE message ALO 11-1 dtd 10 Dec 58 to Hq USAF and others states SHAPE comments and proposal for construction of operation facilities for Jupiter equipped squadrons deployed to the Continent. 70

12 December 1958

Jupiter Combat Training Launch Program:
AFJUPLO message ORDAB-W-LBG-4-12-43-E dtd
12 Dec 58 to Hq USAF and others outlines
some problems relative to missile
allocations for support of the CTL and
summarizes the CTL program as developed.
during recent conferences with commands
concerned, and request Hq USAF guidance on
number of missiles to be provided for
subject program. 71

# -

12 December 1958

Jupiter FY-59 O&M Fund Requirements: AFJUPLO message ORDAB-W-MON-12-46-E dtd 12 Dec 58 to Comdr AMC states revised estimated Q&M requirements for period 1 Jul 58 through 30 Jun 59. This information supersedes O&M fund requirements previously stated in AFJUPLO message ORDAB-WP-LBG-4-11-24-E dtd 7 Nov 58.72

12 December 1958

Missile Indoctrination/Language Training of Support of Jupiter: Hq ATC message ATOTT-MBO-516 dtd 12 Dec 58 to Hq USAF and others summarizes the proposed language training program for foreign nationals and effect of lack of government-to-government agreement on this program. Also advises bid for contract Instructors in support of this program is held in abeyance until 24 Dec 58 pending USAF guidance. USAF message AFPTR-T-2 52003 dtd 13 Dec 58 advised ATC that 5 Jan 59 is deadline date for contract negotiations and if this date passes then contract negotiations will not begin until June 59 for training to commence on 19 Jul 59. This will require SAC to man the 865th and partially man the 866th. Hq USAF message APTR-T-2 52002 dtd 13 Dec 58 pertains to this matter in general. 73

17 December 1958

Agreement between BMC & MOAMA re transfer of Executive Management Responsibility from BMC to MOAMA on 1 Jan 59.74

19 December 1958

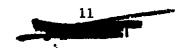
Establishment of MOAMA Jupiter European Field Office (MOJEFO): AMC/BMC Field Office Message to General Callahan and General Funk from Colonel Foote, cite No. BMETO-LBG-5-12-43-E dtd 19 Dec 58 outlines action taken to establish and man the MOAMA Jupiter European Field Office. 75

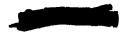
19 December 1958

Approval of EMR transfer by Hq AMC. 76

23 December 1958

SAC Position on Jupiter Operational Configuration: Hq SAC message DPLBC 6966 dtd 23
Dec 58 to Hq USAF and others states SAC concern over degree of changes to Jupiter





operational requirements being recommended by USAFE and restating that should NATO deployment fail to materialize, SAC still expects to follow the operational planning reflected in SACOP 1-58 dtd 21 Oct 58 (Revised).

24 December 1958

AFJUPLO Comments on Hq USAF message AFCGM 51685 dtd 4 Nov 58; AFJUPLO Message ORDAB-WP-LPG-4-12-97-E to Hq USAF and others contains AFJUPLO comments primarily or the NATO manning and language training programs effected by revised deployment schedule prepared in Hq USAF message AFCGM 51685 dtd 4 Dec 58.

1 January 1959

Transfer of EMR from BMC to MOAMA. 79

1 January 1959

Phase-down of AFJUPLO, Inglewood to be completed by 30 Jan 59.80

26 March 1959

AFJUPLO Quarterly Progress Report for Second Quarter CY-1961 disclosed that Italian-U.S. Agreement signed.

3 April 1959

Jupiter R & D missile 22A was fired from the Atlantic Missile Range at 1934 hours EST. All primary missions were successful. The nose cone impacted in the prescribed target area at a range of 1302 nautical miles.

6 May 1959

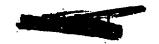
Jupiter R & D missile 12 was fired from the Atlantic Missile Range at 2047 hours EST. The major primary missions were accomplished, although preliminary data indicated that the nose cone impacted 68.9 nautical miles short and 4.9 nautical miles right of the target. The range for this flight was 1302 nautical miles.82

8 May 1959

As of this date, a total of 16 Jupiter R & D firings had been accomplished. Of these, eleven were considered successful, four partially successful, and only one was considered a failure.

14 May 1959

Jupiter R & D Missile 17 was fired from the Atlantic Missile Range at 0052 hours. At a prescribed range of 1302 nautical miles, the nose cone landed 0.40 nautical miles left and 0.26 nautical miles beyond the target.84



28 May 1959

Jupiter R & D missile 18 was fired from the Atlantic Missile Range at. 0235 hours EST to a range of 1302 nautical miles. This flight was of particular significance because it was the first American launch on which primates were passengers. Able, an American-born Rhesus Monkey and Baker, a Squirrel Monkey, were successfully recovered from the nose cone by crew members of the recovery ship U. S. S. Kiowa, approximately 90 minutes after lift off. Officials conducting the experiment for NASA also placed small quantities of yeast, corn, mustard seed, fruit fly larvae, human blood, mold spore, and fish eggs in the nose cone in order to conduct further studies of the effects of space flight, cosmic radiation, and so forth, upon lower forms of animal life and other living systems.85

8 June 1959

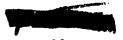
As of this date, there have been 18 Jupiter R & D firings. Of this number, 12 have been considered successful, five partially successful, and one considered a failure.86

18 June 1959

A representative of Hq USAFE briefed the Commanders of ABMA and MOAMA on the status of negotiations with Italy. It was apparent that the earliest possible M-date would be 1 June 1959 rather than the then official M-Day of 1 April. In addition, construction and facility requirements indicated an extension of the deployment schedule for the first emplacement beyond M/190.87

22 June 1959

The Commander, AOMC, informed the Army Chief of Staff of the high level of readiness and training of both the 864TTS and the Installation and Checkout Team--a state of preparedness which makes possible deployment of a USAF-manned launch emplacement anywhere in the world on U. S. controlled land within 30 days of "go-ahead". This early deployment of the U. S. manned 864th TTS would not jeopardize the later deployment of IAF manned units on the current schedule and would insure that the Jupiter





System would not remain inactive in storage. According to the same source, the Commander, MOAMA has taken similar action through USAF channels.<sup>88</sup>

9 July 1959

Jupiter R & D missile 15, the 19th
Jupiter IRBM to be flight tested and the
seventh IOC prototype to be flight tested,
was fired from AMR at 2001 hours EST.
All primary and secondary missions were
successfully accomplished. Early estimates
indicated that the nose cone impacted well
within one nautical mile of the pre-selected
target 1302 nautical miles down range.
The most reliable indicator revealed a miss
distance of only 0.48 nm short and 0.09 nm
to the right.89

10 August 1959

The USAFE and the IAF signed the Technical Agreement pertaining to the deployment of the Jupiter Weapon System to Italy. Concurrent with the signing, 10 August became the officially designated M-Day. USAFE advised ABMA that the Beneficial Occupancy date for the first launch position is 1 April 1960 rather than 15 March 1960, as previously designated. Consequently, deployment planning "is not on a 190-day schedule, as previously envisioned, but is based on specific BOD's furnished by the IAF."90

26 August 1959

Jupiter R & D missile 19 was fired from the AMR at 2030 hours EST to the prescribed short range of 300 nautical miles. Preliminary reduction of data disclosed that the nose cone landed 0.03 nm short and 0.22 nm to the right of the intended target. 91

16 September 1959

Jupiter R & D missile 23 fired from AMR at 0645 hrs EST. After approximately 13 seconds of flight the missile broke up. After a study of the data accumulated, officials believed that the cause of the failure was a defective silver-soldered joint of the flexible hose assembly, which interconnects the high-pressure gaseous nitrogen triple sphere to a smaller volume gaseous nitrogen sphere. 92



30 September 1959

R & D missile 24 was fired successfully from AMR at 2028 hours EST to a precalculated range of 1299.4 nautical miles. This flight was postponed from 23 September because of the discovery of a leak in a one and one-fourth inch flexible fuel-start line leading to the gas generator in the tail section during fuel operations in the count-down sequence on the 23rd. 93

October 1959

ABMA completed work on Jupiter IOC missiles 120 and 121 during this month. According to this source, "these missiles will be held in storage until required for use with the Third Squadron." The delivery of these missiles completed the Air Force requirement on ABMA for production of IOC missiles. 94

2 October 1959

The first airlift of Jupiter material departed Brookley Air Force Base. 95

11 October 1959

The first surface shipment departed Brookley aboard the S. S.May-Lykes and arrived at Taranto, Italy, on 28 October 1959.96

21 October 1959

R & D missile 31 was successfully fired from AMR at 2220 hours, EST to a prescribed range of 1600.448 nautical miles. Nose cone impacted 0.9 nm short and 0.6 nm to the right.97

28 October 1959

The U. S./Turkey Country-to-Country Agreement signed. For planning purposes, 1 June 1961 was established as the BOD for the first launch position. 98

.2 November 1959

The LOGBALNET Communications Circuit became operational between MOAMA and the overseas site. 99

4 November 1959

R & D missile 33 was successfully fired from AMR at 1938 hours EST, to a range of 1299.4 nm. Impact measurement: 0.56 short and 0.09 nm right.100

5 November 1959

The second surface shipment of Jupiter equipment departed from Brookley AFB. Arrived in Taranto on 20 November. 101



An Italian contractor, Emilio Medioli.

9 November 1959

and Figli Spa Mariotti, commenced work to rehabilitate the Interim RIM area 102 10 November 1959 Missile 205, which was used at ABMA for procedures proofing in the Match-Mate Program, was dismantled. 103 13 November 1959 Mating of the last missile scheduled for matching and mating at ABMA--Missile System 209--was completed. 104 18 November 1959 R & D missile 25 was fired successfully from AMR at 2031 hours EST, to a precalculated range of 664.8 nm. Impact: 0.9 nm over and 1.0 nm left 105 22 November 1959 Two C-124 aircraft carrying the second air shipment consisting of RIM test equipment. system documentation, and one trainer missile on transporter, departed U. S. Army Airfield, Redstone Arsenal. 106 9 December 1959 R & D missile 32 fired from AMR at 1908 hours EST to a range of 1299.4 nm. Impact: 0.3 nm short and 2.6 nm right. 107 16 December 1959 R & D missile 26 fired from AMR at 1903 hours EST. Range: 300 nm. miss distance of 0.0 in range and 0.1 nm right. 108 Pentadome erected at site. 109 29 December 1959 7 January 1960 Pentadome deflated because of high winds. Minor damage systained to the Pentadome, but it was re-erected after repair. 110 13 January 1960 Heavy winds damaged the Pentadome for the second time. After deflation of the Pentadome and its removal from the concrete pad, "it was decided to discontinue further use of the structure".111 13 January 1960 First training missile erected on site in Italy. It was originally scheduled for erection on 10 December 1959. However, the joint decision of General Pasti, Vice Chief of Staff, Italian Air Force and



General Disosway, Deputy Commander, USAFE-ADVON,

not to erect the missile was based on General Pasti's opinion that the current high rate of unemployment in Gioia del Colle, combined with a possible demonstration pertaining to missile erection might incite strike action.112

15 January 1960

As of this date, there had been a total of 27 R & D firings. Of this amount, 20 were considered successful, five partially successful, and two failures. 113

25 January 1960

Jupiter R & D missile 28 fired from AMR at 1947 hours EST to a precalculated range of 1299.4 nm. Impact: 0.04 nm over and 3.27 nm left of target. 114

1 February 1960

The first three tactical missiles--numbers 201, 202, and 203--shipped from Redstone Arsenal via C-124, arrived at Gioia del Colle. 115

4 February 1960

Jupiter R & D'missile 30, the last R & D missile (Underlining added for emphasis), fired from AMR at 1920 hours EST, to a precalculated range of 1299.4 nm. Nose cone impacted 0.67 nm short and 0.52 nm right of target.

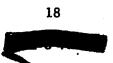
The success of the Jupiter R & D program is indicated by the fact that of the 29 Jupiter R & D missiles fired, 93 per cent were considered successful or partially successful, and only seven per cent were considered failures.

This firing schedule was finished approximately four months ahead of the date scheduled for completion of the original Jupiter R & D firing schedule that was established on 23 February 1956.

Also of significance was the fact that of the 29 firings, 19 were tactical prototypes. These 19 were fully guided and of an IOC configuration. Of these 19 missiles, 16 were of sufficient accuracy to land within a circle of five nautical miles radius. Seven of the last 13 launched were within the Jupiter design CPE of 0.81 nautical miles radius. 116



21 March 1960	Hq USAFE furnished the MOAMA with the Unit Allowance List for the Turkish Support Squadron. MOAMA has begun processing and assembling the required material. 117
22 March 1960	The fourth surface shipment of Jupiter Weapon System GSE earmarked for the third and fourth launch positions departed Brookley AFB aboard the SS Almeria-Lykes. 118
4-5 April 1960	Tactical Jupiter Missiles numbers 204 through 206 departed Redstone Arsenal for Gioia del Colle aboard C-124 aircraft. 119
13 April 1960	The second and last interim training site became operational at Gioia del Colle. 120
18 May 1960	The SS Lipscomb Lykes departed Brookley AFB for Taranto, Italy, with GSE and equipment for the fifth and sixth launch positions. 121
23-24 May 1960	IOC missiles 207 through 209 left Redstone by C-124 aircraft and arrived on site on 27 and 28 May 1960. 122
1 June 1960	USAFE and Turkish Air Force officials signed the Technical Agreement. 123
July 1960	The Air Force airlifted missiles 210-212 to Italy during the month. 124
5 July 1960	The Commander of MOAMA and the Deputy Commander of ABMA, together with a group of Air Force and Army personnel, as well as contractor officials, departed for Gioia del Colle, Italy, to study contamination problems associated with the Jupiter system. 125
11 July 1960	Launch Position I transferred to the Italian Air Force. 126
12 July 1960	The sixth surface shipment departed Brookley AFB with GSE for the sixth and seventh launch positions. 127
15 July 1960	Launch Position I achieved operational capability. 128





2 August 1960

MOAMA awarded letter contract AF-61 (602)1668, "for the procurement, installation and checkout of a communications system to provide communications links between launch positions and the main base, and from the main base to Izmir, (Det 20 TUSLOG)" to USAFTA. 129

1-2 September 1960

Missiles 213-216 airlifted to Italy. 130

14 September 1960

Permanent Training Site no. 1 turned over to the Italian Air Force. 131

15 September 1960

MOAMA issued a letter contract, AF-01 (601) 33513, to Chrysler Corporation for the installation and checkout of one Jupiter squadron in Turkey. The squadron was to consist of 15 Jupiter missiles at five launch positions, a Missile Assembly Maintenance Service Building, a training emplacement, and a 20 ton per day LOX Generating facility.

19-20 September 1960

Missiles 301-303 airlifted to Italy. 133

30 September 1960

As of this date, 87 of the 93 missiles had been delivered. 134

12 October 1960

The 48-hour acceptance test on the first 25 ton per day LOX plant successfully completed. 135

15 October 1960

The seventh surface shipment of material departed from Brookley AFB. 136

17 October 1960

The IAF accepted custody of Launch Position II. However, final acceptance depended upon completion of the investigation of the explosive bolt problem and the subsequent incorporation of an appropriate solution. 137

20 October 1960

Missile 217 was fired at AMR at 1102 hours, EST. This was a live systems test and all missions proved successful. The nose cone impacted 1.1 nm over and 0.2 nm right of the predetermined target located 962.5 nm downrange.

31 October 1960

As of this date, 89 of the 93 missiles programmed have been delivered. The three remaining Block III missiles are on schedule. Deliveries will be completed in December 1960. Missile number 218 is scheduled for delivery in June 1961. This missile, being assembled at CCMD from available parts, will be delivered to meet the required date.





23 January 1961

The initial surface shipment of Jupiter material to Turkey, which also included some equipment for Italy, departed Brookley AFB. The material arrived in Italy on 8 February and in Turkey on 11 February. 140

February 1961

Initial movement of USAFTA personnel from Italy to Turkey. 141

8 February 1961

High winds toppled and inflicted serious damage to missile 214 at the Italian deploy-This missile was located at ment site. Launch Position IV in Gioia del Colle. The winds were estimated to have reached a velocity in excess of 60 knots. An investigation revealed a requirement for an improved locking device (auxiliary ring to launcher). The damaged missile was returned to CCMD for recovery of serviceable and reparable components. Number 307 has been reallocated to Launch Position IV. Number 323, originally scheduled for deployment to Turkey, will replace number 307 in Italy. A replacement for number 323 is planned. 142

13 February 1961

Launch Position V turned over to IAF. 143

3 March 1961

Launch Position VII transferred to IAF. 144

24 March 1961

Launch Position IV transferred to IAF. 145

April 1961

The two letter contracts, listed earlier, were incorporated into one contract--AF-01 (601)33513.146

14 April 1961

Launch Position III transferred to IAF. 147

22 April 1961

IAF personnel fired missile 209 in their first Combat Training Launch. The nose cone landed .79 nm over and 2.19 nm right of the target at a range of 1514 nautical miles. 148

26 April 1961

Launch Position II transferred to IAF. 149

26 April 1961

The two 20 ton per day LOX Plants, numbers 1415 and 1188, received from CONUS and were placed in staging area and deprocessed. (Turkey).150



Launch Position IX transferred to 29 April 1960 LOX Plant 1415 moved into the LOX 1 June 1961 Generating Area on schedule, in Turkey.  $^{152}$ Launch Position VI turned over to IAF. 153 7 June 1961 Launch Position VIII transferred to IAF. 154 13 June 1961 Scheduled date for commencing installation 15 June 1961 of Plant 1188 in Turkey; however, unscheduled maintenance work on Plant 1415 delayed installation of the second plant--1188--until July. Non-availability of materials and procurement problems postponed installation until October. The plant was turned over to the 7231st TTG on the 27th of that month. 155 Plant 1415 put into use in an interim 16 June 1961 configuration to furnish liquid and gaseous nitrogen for use in checking out equipment in the staging area. 156 CCMD fulfilled its responsibilities in the 19 June 1961 matching and mating program except for the shipment of related items which are required at MOAMA by 1 August 1961, when it completed matching and mating work on number 121 at CCMD, Detroit, Michigan. 157 Launch Position X turned over to IAF ten days 20 June 1961 ahead of schedule. 158 As of this date, a total of 31 Jupiters had 30 June 1961 been fired--twenty-nine in the R & D program, one as a Live Systems Launch, and one as a Combat Training Launch. Of the 31 fired,

been fired--twenty-nine in the R & D program, one as a Live Systems Launch, and one as a Combat Training Launch. Of the 31 fired, 24 were successful, five partially successful, and only two were failures. Significantly, 19 of the 29 R & D missiles fired were tactical prototypes with 16 of these landing within a circle of five nautical miles. Seven of the 16 landed within the Jupiter CPE of 0.81 nm, the most stringent accuracy requirement placed on any long-range ballistic missile. The success achieved in the Jupiter firings has created a high confidence factor among all persons associated with the program. 159



1 July 1961

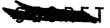
This was the programmed date for BOD of the Maintenance Shop in Turkey, with turnover expected to be accomplished 30 September 1961. Construction problems encountered caused further delays in the installation and checkout of weapon system equipment slated for the facility. The essential equipment was installed by the middle of September. Yet, installation of the other equipment plus cleaning that which had been installed previously had to be performed before the end of the month. At this time, installation activities were beginning at the Launch Positions. created a demand for additional manpower at the positions. As a consequence, personnel were diverted from the Maintenance Area to the Launch Positions, thus delaying final installation activities in the Maintenance Shop. JEFO officials accepted the shops on 3 January 1962 and final turnover to the 7231st TTG was accomplished on 5 February 1962.160

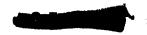
7 July 1961

Definitization of CPFF contract AF 01(601) 33513 between the Air Force and the CCMD provided for the latter to install and check out the Jupiter Weapon System in Turkey and to provide a microwave communications systems between the launch positions and the head-At the time of definitization, the quarters. estimated cost and fee amounted to \$10,576,765.00. Supplementary Agreement #3, dated 7 December 1961, authorized the contractor to provide janitorial services for a 90-day period at an estimated cost of \$700.00. As a result of this agreement, the estimated cost increased from \$9,958,810.00 to \$9,959,510.00 and the total amount of the contract was increased from \$10,584,252.00 to \$10,584,952.00.161

24 July 1961

Actual BOD for the Training Emplacement, although it had been programmed for 1 July 1961. Construction problems caused this delay. By the first week in August CCMD personnel had moved all the equipment into the area. In addition to the construction problems that retarded completion of the installation was the late delivery of LOX and LN2 lines to the training site. Late delivery of these items, however, stemmed from the fact that the cleaning shop facility in the maintenance area was not available. Thus, the lines had to be cleaned in interim





facilities in the staging area. As a result, personnel could not meet the specifications required. This called for further cleaning at a later date. On 28 August 1961, CCMD personnel turned over the training emplacement area to the 7231st TTG. 162

1 August 1961

This was the programmed date for the BOD for Launch Position II. Initial access was granted to the USAFTA on 21 August 1961. The late delivery of the LOX and LNo lines from the cleaning shop caused some delay in the installation work at the position. addition, the late receipt of vernier engines, as well as the tardy receipt of the Power Distribution Hut from the U. S. caused delays in the installation and checkout work at the launch position. However, on 31 October 1961, USAFTA personnel transferred Launch Position II to the Air Force. This was the first launch position in Turkey to be completed and the transfer occurred on the programmed date--31 October 1961.163

23-25 October 1961

USAFTA officials completed the acceptance demonstration on plant 1188. (See item listed under 15 June 1961). 164

27 October 1961

Plant 1188 turned over to the 7231st TTG.

9 November 1961

Plant 1415 turned over to the 7231st TTG in a permanent configuration. Installation problems associated with plant 1188 delayed the transfer of this plant. (See chronology for 15 and 16 June 1961). 165

1 September 1961

Programmed date for access to Launch Position III. Actual BOD occurred on 26 September 1961. Launch Position III was initially programmed to be the third in order of installation, but reprogrammed to become the second because of construction problems at other positions. USAFTA officials completed the installation and checkout work for Position III and turned it over to the Air Force on 28 November 1961, two days ahead of schedule. Thus, Launch Position III became the second position completed and turned over to the Air Force. 166





28 November 1961

The 7231st TTG accepted custody of the LOX storage area. 167

21 December 1961

Launch Position IV turned over to USAF. This was the third position accepted.

Limited access to the position began on 7 November, although it had been originally planned for BOD on 1 November. Complete access to the entire launch position, however, was delayed for four weeks because of construction. Construction problems delayed the completion of the Crew Ready Building. As a result, ten house trailers were moved in to provide living quarters for personnel. Construction crews worked six days a week to complete the project. 168

3 January 1962

The JEFO accepted the Maintenance Shop. However, at the time of acceptance, there were five waivers and 37 deferred maintenance items scheduled for correction. 169

23 January 1962

Launch Position I, the fourth position completed, turned over to the 7231st TTG. USAFTA personnel gained accessibility to the first and second emplacements on 1 and 7 December respectively, and accessibility to the third emplacement on 27 December 1961. Prior to the BOD, USAFTA and Air Force personnel had moved all equipment and materiel to the site area, and staged it on perimeter roads. This was "insurance" against bad roads, inclement weather, and so forth. 170

5 February 1962

USAFTA personnel transferred custody and control of the Maintenance Shop equipment to the 7231st TTG. 171

28 February 1962

USAFTA personnel turned over Launch Position V, the final one, to the Air Force. USAFTA had gained access to the position during the last week of December 1961.172

May 1962

Because of the NATO Maintenance Supply Services Agency's difficulties in attaining the capability to support existing and less complicated systems, Hq USAF disclosed that it would continue supporting the Jupiter. 173



#### CHAPTER II: THE JUPITER

#### Antecedents of the Jupiter

- (U) Development processes attached to the Jupiter missile are traced to German interests in missilry as early as 1931. In that year, Captain Dornberger, who later rose to the rank of major general, headed a military rocket development program. In 1933 Adolph Hitler visited the army's experimental rocket station at Kummersdorf, but was unimpressed with the developments he saw. Members of the German general staff, however, were. The missile program received firmer support in 1934 because of Field Marshal Werner von Fritsch's interest. At that time von Fritsch was commander-in-chief of the Reichswehr. His successor, Field Marshal Walter von Brauchtisch, gave even firmer support to the rocket program. And by 1937, the program received further impetus with the start of construction of the Penemunde experimental station. 1
- (U) German scientists launched the first full-sized V-2 -- a forerunner of the Jupiter -- in June 1942. The fourth, fired on 3 October 1942, hit the target at a range of 190 kilometers, about 118 miles.<sup>2</sup>
- (U) Internal problems harassing the German industrial economy, as well as Hitler's opinions, offset the significant advancements scored by the V-2.<sup>3</sup> For one, proponents of the earlier V-1 were competing for higher priorities. Leaders in the Luftwaffe favored this weapon, the flying bomb. But in March 1943, one source reported

that Hitler had dreamed that the V-2 would never land in England. Therefore, he lost all interest in the V-2 program and directed Reichminister Albert Speer, responsible for wartime production, to cancel the priorities assigned to the V-2.

- (U) During the same month, however, Speer sent the chairman of a long-range weapon development committee to salvage what could be used from the V-2 program. After the emissary reported in favor of continuing the program, Speer then arranged for its revival. Soon thereafter, Dornberger and Professor Werhner von Braun, "the technician chiefly responsible for creating the V-2," made a detailed presentation to Hitler. They gained his permission to continue their work and restore production.
- (U) Although the V-2 entered World War II too late to become a turning point, it wreaked havoc on the allies. At the time of the German collapse, more than 20,000 V-weapons had been fired. Some sources estimated that 1,115 rockets had been fired at England. Also, 1,675 V-2's were fired at targets on the mainland. Evidence is not available to disclose the number of test firings conducted in the V-1 and V-2 programs. 6
- (U) With the impending collapse of the German government close at hand, U. S. officials put into operation a project --Paperclip--by which they could recruit as many top-flight German scientists and technicians as possible. Sources reveal that the Secretary of War approved the transfer of the first contingent -- about 130 of these

scientists -- to this country, pending the outcome of interrogations and background investigations.\*8 In addition, U. S. military officials were able to get many plans, manuals, and related documents, as well as about "three hundred boxcar loads" of V-2 material. Following the arrival of 62 scientists and their equipment at Fort Bliss, Texas, American interest in early V-2 developments reached a high level.

- (U) During the March 1946 June 1950 period, the newly transplanted missile team, augmented with American scientists, made significant advancements in missile developments. They fired a total of 52 V-2 weapons; the first on 14 March 1946, and the last on 28 June 1950. During this period they developed the "Corporal" series for the Army. 10
- (U) But a greater event of significance occurred in 1950 that put the Southeastern states in the missile business. Army officials moved its headquarters for its missile programs from Texas to the Redstone Arsenal at Huntsville, Alabama. Before the end of the year, a total of "500 military personnel, 130 German scientists, 180 General Electric contract personnel, and 120 Civil Service employees had moved from Fort Bliss to Redstone." 11

<sup>\*</sup> On 18 May 1948, according to one source, there were 1136 German and Austrian scientists, technicians, and dependents in this country. Of this number, 492 were scientists and technicians, and the remaining 644 were dependents. Of the scientists and technicians, the Air Force had the largest number -- 205. The Army had 177. "The largest single group of specialists was associated with the Air Force and the second largest with the Army -- 146 at Wright Field, and 121 at Fort Bliss."

- (U) Missile developments were, at this time, leading closer to the Jupiter. Scientists were putting the Army's Redstone missile through its development and production stages. While the Redstone was being perfected, a new missile was in the development stages. This was the Jupiter.
- (U) Army Ballistic Missile Agency scientists had to use an available and realiable missile system to test the subsystems and components for the Jupiter. They assembled a "hybrid" missile and called it the Jupiter C. 13 Jupiter C is an abbreviation for "Jupiter Component Re-entry Test Vehicle." Its primary purpose was to "test solutions to the aero-dynamic heating problems faced by the Jupiter's nose cone on re-entering the earth's atmosphere." 14 The main stage of this hybrid missile was a Redstone. According to an Army Ordnance Missile Command publication, the 15

second, third, and fourth stage propellant motors are added to the first-stage liquid-fueled Redstone. There are eleven scaled-down Sergeant motors in the second stage, and three in the third, arranged in cylindrical clusters. The fourth stage is a single motor.

Initial launching of this hybrid missile occurred on 20 September 1956. On this mission it hurled its payload in excess of 3,300 miles downrange from the launch pad at Cape Canaveral, Florida. 16 And on 8 August 1957, another "C" sent a scale model of a nose cone for the Jupiter more than 1,200 miles downrange. The nose cone reached an altitude in excess of 600 miles during this flight. 17 These previously mentioned missiles—the V-1 through the Jupiter C—were the antecedents of the Jupiter. 18



### Capabilities

The Jupiter has proven its accuracy and reliability at all ranges. It is effective from a minimum range of 300 nautical miles to a maximum of 1,500 nautical miles, while hurling a 1,600-pound warhead. Converted to land measure, its range would be from a minimum of 345.24 miles to a maximum range of 1,726.2 miles. At the maximum range, its circular probable error factor is computed at 1,500 meters, or 4,920 feet. 19

Concerning target selection, crews can change from a primary to a secondary target during the fifteen-minute countdown. Should a requirement arise calling for a new pair of primary and secondary targets, crews could set these new selections into the system and check them out in a maximum time of two hours. This can be accomplished without disturbing the missile or its supporting equipment.

The warhead is equipped with several safety devices.

These devices can prevent explosions from occurring during ground operations or during the early period of flight. Also, the warhead has a safety device that prevents an explosion over friendly territories. The type of burst--either aerial or ground--can be selected during the fifteen-minute countdown period. 21

## Description

The Jupiter is composed of a semi-monocoque airframe\*, a

The U. S. Air Force Dictionary defines monocoque as "a type of airplane construction in which the skin of the fuselage bears the primary stresses arising in the fuselage. If /the monocoque is/provided with longerons, it becomes a semi-monocoque." The same source defines longeron as "any relatively heavy longitudinal structural member....usually running continuously across a number of formers."



liquid-propelled rocket engine, an inertial guidance and control system,\* and a nuclear payload. 22

The Jupiter is divided into three major assemblies. are the warhead unit, the aft unit, and the power unit. 23

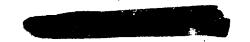
The warhead unit is comprised of the nose cone, the warhead with its safety and arming devices, and the power supplies for activating the warhead. Overall, this unit is an air-tight, riveted structure consisting of a conical aluminum alloy shell that is reinforced with stiffener rings. Also, it has a dish-shaped bulkhead at the rear. The nose cone is designed to withstand the intense heat and pressures during re-entry. While re-entering the earth's atmosphere, the layers of protective material on the nose cone shield the warhead and its mechanisms. These materials are a combination of fibreglass, plastic, and asbestos. When exposed to the heat, they absorb it and melt, or ablate. \*\*24

The aft unit, according to an ABMA orientation handbook,  $^{25}$ 

is a truncated cone which houses most of the guidance and control components and the vernier engine. unit structure is composed of an aluminum alloy shell, stiffener rings, a pressure tight, dish-shaped bulkhead, which divides the aft unit into two sections. The forward section contains the guidance and control The forward section is divided into four compartments by a crossed partition on which the components are mounted. The rear section houses the vernier engine, the spatial attitude system, and the spin rockets. Since it is not practical to effect

This differs from another principle -- the heat sink. This means the storing of heat in a large mass of material that has a high thermal capacity.

An onboard guidance system where gyros, accelerometers, and possibly a gyro-stabilized platform satisfy guidance requirements without the use of any ground-located components; entirely automatic, following predetermined trajectory.

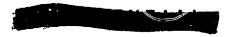


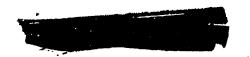
an accurate termination of thrust of the large. main engine, it is cut off and the power unit is separated prior to attaining final programmed velocity. Then, if necessary, the vernier engine is fired and further accelerates the remainder of the missile to the final desired velocity. As the name indicates, thrust termination of the vernier engine may be accurately controlled. The spatial attitude system consists basically of a fibreglass nitrogen storage sphere and four pairs of opposed jet nozzles equally spaced around the aft unit circumferences. By discharging high pressure nitrogen from appropriate nozzles, forces may be exerted in yaw, pitch, or roll directions to maintain the desired attitude. The spin rockets are solid propellant rockets which impart a spin to the warhead and aft unit combination prior to re-entry.

The aft and warhead units are joined by a ring of 52 aluminum bolts. A line containing an explosive charge is threaded next to the ring of bolts. When detonation occurs at the appropriate time in flight, all bolts are severed and the two units--aft and warhead--are separated by the internal pressure in the aft unit: 26

The power unit, according to the description in the ABMA handbook, is a 27

105-inch diameter cylinder containing the center section, the tail section, the main rocket engine and all associated plumbing and wiring. The center section is a cylinder fabricated of machined aluminum alloy skin strengthened by stiffener rings spot welded to the skin. Three sealed bulkheads are located to divide the center section into two tanks. fuel tank, located above the liquid oxygen tank, contains perforated, truncated cone type baffles to reduce the dynamic effects of fluid sloshing during the planned missile pitch program. The liquid oxygen tank also contains perforated antislosh baffles for the above reason, but these are eight accordian shaped strips placed length-wise within the tank. The fuel supply line extends through the liquid oxygen tank and is insulated from the extreme low temperature of liquid oxygen. Provisions are made for connecting electrical and pneumatic lines from components forward of the





propellant tanks to the tail section by running an aluminum conduit through the tanks. The tail section of the power unit has a corrugated skin....stiffened with riveted rings. main rocket engine, NAA S-3D, develops a thrust of 150,000 pounds at sea level and is attached to the tail section by a three point, single plane mounting system. A partial bulkhead, three longitudinal tapered box beams, and three compression struts transfer the engine loads to the missile. The main engine is capable of being gimballed by hydraulic actuation, which is controlled by the guidance and control system. Engine gimballing provides propulsion forces in the missile yaw and pitch directions. A major component of the main engine assembly is the turbopump, which force-feeds propellants and maintains hydraulic system pressure. The turbopump, which also drives the hydraulic pump through an auxiliary drive shaft, is driven by hot gases, developed by liquid propellants burning in the gas generator. The hot gases are then exhausted just forward of the aft end of the missile. The direction of the exhaust is controlled in a similar manner to the engine gimballing, thus provding a propulsive force for missile roll control.

The power unit is attached to the aft unit by six explosive bolts. At the appropriate flight time the bolts are detonated, after which six compressed helical springs effect separation of the power and aft units.



#### CHAPTER III: MAJOR MANAGEMENT DEVELOPMENTS

- (U) Secretary of Defense Charles E. Wilson's 26 November 1956
  Memorandum had a far-reaching effect as later events have proved-on Headquarters, Mobile Air Materiel Area. His memorandum to the Armed Forces Folicy Council defined the responsibilities assigned to the three Armed Services. According to his directive, "Operational employment of the land-based Intermediate Range Ballistic Missile system will be the sole responsibility of the U. S. Air Force." Secretary Wilson, however, did not "prohibit the Army from making limited feasibility studies in this area."
- (U) In February 1958, a series of developments pointed to the role that Headquarters, MOAMA, would assume in the Air Force missile program. On 3 February 1958, Headquarters, USAF, assigned the executive management responsibility for the Jupiter weapon system to the Air Materiel Command. A few days later--12 February--the Air Force established the Jupiter weapon system project office at the Inglewood, California, complex. 5\*
- (U) On the next day, Brigadier General Ben I. Funk, Deputy

  Director Ballistic Missiles, Directorate of Procurement and Production,

  Headquarters, AMC, submitted a staff study to the Commander, AMC,

DeHaven's AMC Participation in the AF Ballistic Missiles Program (1 January - 30 June 1958) Part I, Vol I, p. 5, discloses that the complex, at that time, was comprised of the ARDC's Air Force Ballistic Missiles Division, the Space Technology Laboratories under contract as the weapon systems engineering directors, and the Ballistic Missiles Office." Also, elements of the Strategic Air Command /SAC-MIKE/ were located at the Inglewood complex.

about the possibility of assigning the Jupiter to the MOAMA.<sup>6</sup> The study outlined four criteria that the staff had established as its objectives. In the first place, the prime goal was to transplant and infuse the Air Force concept of ballistic missile management into the Jupiter program. Secondly, to provide surveillance, guidance, and assistance to the Army so that the transition from the Army concept to the Air Force management philosophy could be accomplished without disrupting production and deployment schedules. This would be in accordance with the proposed Interservice Agreement. Thirdly, to seek a high degree of uniformity "particularly as to the IRBM - GSE." In this area they hoped to obtain maximum use of Air Force Thor experience, especially in the area of ground support equipment. And lastly, to put into effect this principle of uniformity immediately "and on a progressive basis" so that deployment schedules could be attained.

- (U) The staff study contained three possible courses of action.

  In the first place, the Air Force could assign the ballistic missile management role of the Jupiter to the Ballistic Missile Office and look to the San Bernardino Air Materiel Area for logistic support. Secondly, the Air Force could assign the management role to the MOAMA; that headquarters could man the AFJUPLO, and also provide its own logistic support. Finally, the Air Force could assign the management role of the Jupiter to the Ballistic Missiles Office with the MOAMA manning the AFJUPLO and providing its logistic support for the weapon system.
- (U) After evaluating these possible courses of action, the staff noted that a compromise was evident, since none of these plans

appeared to satisfy all of the key factors involved. They noted that it was not feasible to assign weapon system management functions to the MOAMA "at the outset." However, the MOAMA could accomplish the logistic support functions for the Jupiter to the extent that the SBAMA was currently performing for the Thor. Also, the MOAMA could provide manning and support of the AFJUPLO "at this time." And at a later date, when the MOAMA had acquired the desired capability, the missile management assignment could then be transferred to that headquarters.

- (U) In conclusion, the staff believed that the assignments should be made in the following sequences. Initially, assign the missile management function for the Jupiter to the current manager at the Inglewood complex. Secondly, assign the logistic support functions and manning responsibility of AFJUPLO to the MOAMA. Finally, "when MOAMA has acquired BMM /ballistic missile management/ capability, assign /the/ Jupiter BMM function to MOAMA."11
- (U) On 27 February, General Edwin W. Rawlings, Commander, AMC, put into effect the conclusions outlined in the staff study. He stated that the recently established Jupiter project office at Ingle-wood would require the support of "an AMA Logistic Support Manager and a liaison office (JUPLO) at Huntsville, Alabama." Further, the Army Ballistic Missile Agency would be responsible for developing and produci., the missile. General Rawlings then designated Headquarters, MOAMA, as the logistic support manager for the Jupiter weapon system. 13
- (U) Colonel E. M. Tally, Jr., Deputy Director, Plans and Programs, Directorate of Plans and Programs, Headquarters, AMC, informed General Rawlings on 17 April 1958, that General Funk and General

Callahan had prepared a plan for supporting the Jupiter. According to their plan, the AMC would shift control of the missile from General Funk to General Callahan. Colonel Tally pointed out that such a transfer was "consistent with the requirement to develop additional ballistic missile capability and appears to be a logical solution." He then stated that they would proceed with putting the plan into operation. 14

#### Early Plans for Jupiter Management

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- (U) General Funk and General Callahan presented their views on managing the program to General Rawlings on 3 April 1958. They first noted the Army's role in the logistics support of the missile. Further, that the AFJUPLO--located at the Army Ballistic Missile Agency, Redstone Arsenal, Alabama--would provide the vertical weapon system management. Therefore, they believed that the logistics manager responsibilities at the Mobile headquarters "should be integrated into the present organization." Consequently, all local management resources would be available for planning, programming, and operating the missile logistics system.
- (U) Officials at Headquarters, MOAMA, were putting their plans into operation to handle this newly-acquired responsibility. They were setting up SM-78 work groups in the directorates and offices. Key personnel were moving into the AFJUPLO. However, the local headquarters was retaining these workers on its personnel strength reports. They--employees at AFJUPLO--would report to the MOAMA management group through their chief.

- (U) Although the nerve center for logistics support was at the local headquarters, the pulse beat--procurement, production, engineering, and other related functions--was strongest at the AFJUPLO. The logistics group at Redstone, in addition to supporting and monitoring Army operations in procurement, production, and logistics support, would assist the MOAMA managers in developing plans for phasing the management and operations of the logistics system to the MOAMA.
- (U) General Callahan informed the AMC Commander that the AFJUPLO was in place and "now manned sufficiently to perform a support and surveillance function" in the AMC, ARDC, ATC, and SAC mission areas. Negotiations at Secretarial level, however, would determine the ultimate size and function of the AFJUPLO organization, particularly those in the programming and funding areas. "In any event," AFJUPLO would have a chief, supported by a program control office assigned to, and reporting to the AMC Ballistic Missiles Manager. Groups specializing in logistics for their respective commands, such as ARDC, ATC and SAC-MIKE, would operate in their specific areas through the Chief, AFJUPLO. In conclusion, General Funk and General Callahan requested that an early conclusion of negotiations between the Army and Air Force concerning the Jupiter was of utmost importance to define more specifically the functions of the MOAMA and the AFJUPLO "for the present as well as the future." 17
- (U) By 14 April, local officials had completed a study of the requirements needed to assume the logistics support management of the Jupiter. In fact the Ballistics Missiles Manager, General Funk, had agreed to transfer the Industrial Operations and Logistics Division

within the AFJUPLO to the MOAMA as of 15 April 1958. The study revealed that a total of 142 persons were required to operate the logistics management of the program. Of this amount, local officials planned to assign 22 to the Logistics Operation at AFJUPLO, three to the overseas liaison office, and the remaining 117 to systems offices within the MOAMA directorates and staff offices. General Callahan pointed out, however, that "personnel (quantities and skills) assigned to AFJUPLO and the overseas Liaison Office.....\_would/ vary periodically as requirements dictate." 18

(U) MOAMA management personnel then presented their requirements to Headquarters, AMC, for approval. They pointed out that the number of people needed to operate the logistics system was based "on the most current programming information available." However, they also noted that "as plans and workload materialize, adjustments in manning requirements... /would/ be necessary." 19

# Transfer of Logistics and Industrial Operations to MOAMA

(U) Headquarters, MOAMA, reached another milestone in the Jupiter program on 1 July 1958. Effective that date, Headquarters, AMC, announced that it had transferred the logistics and industrial operations functions of the AFJUPLO, located at the Army Ballistic Missile Agency, Redstone Arsenal, Alabama, from the AMC Ballistic Missile Manager to the Commander, MOAMA. Accordingly, manpower officials at the Dayton headquarters revised the MOAMA military and civilian authorizations to reflect this change. 20

## Objectives to Accomplish Before the Transfer of the Jupiter LSM

- (U) On 10 July 1958, Brigadier General J. A. Barclay, Commander, Army Ballistic Missile Agency, Redstone Arsenal, wrote to General Callahan about the latter's proposal to transfer the Jupiter logistics management responsibilities to the MOAMA. General Barclay noted that Army-Air Force personnel had already reached two general areas of agreement. First, Air Force people were working "side-by-side" with Army employees. Secondly, Army officials had agreed to a target date of 1 April 1959, for transferring the logistics support responsibility to the MOAMA. 21
- (U) General Barclay believed there were other objectives that had to be accomplished before the Army would transfer logistics responsibility. He asked General Callahan for his concurrence in this matter. The Agency Commander assumed that "all the major objectives specified below would be complete by 1 April 1959."<sup>22</sup> These included: <sup>23</sup>
  - 1. 1st Squadron Deployment.
  - 2. Maintenance analysis of known items.
  - Provisioning of spares and spare parts for 1st and Second Squadrons.
  - 4. Initial distribution of required technical manuals.
  - 5. Establishment of Federal Cataloging Program.
  - 6. Replenishment action (follow-on requirements) for 1st Squadron.
  - 7. Maintenance Support program for training requirements.
  - 8. Activation (operation) of Contractor Storage Sites.
  - 9. Communications network.
  - 10. Implementation of Transportation System (AF Responsibility).
  - 11. Establishment of Accountable Records.
  - 12. Publication of WSSCL (Weapon System Stock Control List).
  - 13. Packaging by USAF Specification.
  - 14. Finalization of TTE (Tentative Table of Equipment).
  - 15. Finalization of UAL (Unit Allowance List).
  - 16. Operation of supply distribution system.
  - 17. Comprehensive plans for logistics support.
  - 18. Implementation of failure and consumption data reporting.
  - 19. Implementation of AFM 67-1, Vol. XXIII procedures (AF Supply Manual).

- (U) In his reply, General Callahan wrote that he and General Funk agreed that plans to establish a target date "to coincide with the accomplishment of these objectives" had merit. Hurther, he and General Funk had recommended to the AMC Commander that 1 April 1959, be set as the target date for accomplishing the objectives and transferring Jupiter logistics support responsibilities to the Mobile head-quarters. In conclusion, the MOAMA Commander informed General Barclay that he had received concurrence from Headquarters, AMC, for the accomplishment of these objectives as well as the established target date.
- (U) On 13 November 1958, Mr. John A. Rega, of the Army's Jupiter Support Management Office, and Major David A. Rith, of the Air Force Jupiter Liaison Office, agreed to a plan to transfer the responsibility for logistics functions from the Army Ballistic Missile Agency to the MOAMA. Target dates agreed upon for transferring some of the functions would not be binding if they interfered with support functions "currently assigned" to the Army's Jupiter Support Management Office. Functional areas that were a part of the plan, "or areas requiring further coordination" were as follows: 26
  - A. Transfer of Accountability
  - B. Transfer of Due In Assets Records
  - C. Master Tech Data File
  - D. Voucher Control
  - E. Shipment Control
  - F. Equipment Authorization
  - G. Provisioning
  - H. Cataloging

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- I. Development of Interchangeability Substitution and Standard Item Usage Data
- J. Development of Procurement Data Records
- K. Contract or Storage Sites
- L. Packaging
- M. Transportation

- N. Communications
- O. Maintenance Analysis
- P. Technical & Engineering Data
- Q. Contract Technical Representatives
- R. Depot Level Maintenance of Peculiar Equipment
- S. Modifications
- T. Calibration
- U. Material Deficiency Reports
- V. Material Improvement Projects
- (U) By 21 November 1958, Colonel John E. Devine, Deputy Chief, AFJUPLO, noted that representatives of the ABMA and his organization had coordinated on plans to transfer responsibility for functional areas I, J, and L to the MOAMA. He also noted that they established target dates for transferring functional areas P, S, T, U, and V. Transfer of Executive Management Responsibility
- (U) On 4 December 1958, General Funk wrote to Headquarters, AMC, requesting that the Dayton headquarters transfer the executive management responsibility for the Jupiter to the MOAMA. In his letter, General Funk stated that "General Callahan joins me in recommending that..... the transfer be made effective 1 January 1959."28
- (U) The Ballistic Missiles Center Commander also inclosed a proposed AMC Letter outlining the transfer. The specific functions included the transfer of executive management responsibility and the chairmanship of the weapon system phasing group.
- (U) On 17 December 1958, General McKee informed General Callahan that the AMC headquarters would transfer executive management of the Jupiter effective 1 January 1959. Futhermore, the AMC Ballistic Missiles Center would not retain any management responsibilities associated with the Jupiter. 29
- (U) Confirmation of this realignment came swiftly. AMC General Orders Number One, dated 2 January 1959, 30 disclosed that

The Air Force Jupiter Liaison Office (AFJUPLO) at Redstone Arsenal, Huntsville, Alabama is relieved from assignment to the Air Materiel Command Ballistic Missiles Center and is assigned to the Mobile Air Materiel Area, effective 1 January 1959.

(U) Command and Air Force regulations spelled out the MOAMA Commander's role in the Jupiter program. According to Appendix 2, AMC Regulation Number 23-1, dated 1 January 1959, General Callahan was responsible for accomplishing "the executive management responsibilities for the SM-78 (Jupiter) weapon system as prescribed by AFR 20-10." The latter directive, dated 24 March 1958, 32 defined executive management responsibility as

the state of being primarily accountable or answerable for the initiation, direction, supervision of, and results pertaining to timely actions required on any part or phase of the weapon system.

(U) These, then, were some of the significant developments that resulted from Secretary of Defense Wilson's memorandum, dated 26 November 1956. First, the Air Force received control of all land-based intermediate range ballistic missiles. Secondly, and in a relatively short period of time, the MOAMA became the executive manager for the Jupiter. 33

#### CHAPTER IV: THE MANAGEMENT ORGANIZATION

(U) Just what did the new assignment mean to the MOAMA? What were the organizations involved in the Jupiter's management? What were the lines of communications between these organizations?

LSM and Executive Management Responsibilities

- (U) In answering the first question, a review of the logistic support management responsibilities that were assigned earlier would be in order. First, the logistic support manager would serve as an advisor and management control point for logistic support actions for the Jupiter. Also, he would provide representation to the weapon system phasing group, maintain cognizance, status, and take action to insure the correct phasing of actions required of all collateral air material areas and depots that were supporting the Jupiter. As the system manager he was responsible for providing additional planning, programming, and phasing data to other areas and depots that had a collateral interest or responsibilities to perform for the weapon system. I
- (U) As the MOAMA became the "stateside center of gravity" for the Jupiter, the logistic support manager served as the Air Materiel Command's focal point for the other commands on matters pertaining to the Jupiter. It was his duty to act as the "AMC worldwide agent on all operational, supply, maintenance, procurement, and support functions" relating to the system. He had to insure that the required degree of logistic support was provided to the using commands.<sup>2</sup>

(U) According to AMCR 375-1, dated 25 July 1958, the logistic support manager had these additional responsibilities: 3

Planning, programming, and the computation of requirements for all materiel and services related to that materiel required for the direct logistic support of the assigned weapon system. This includes both the airborne elements of the weapon system and the ground support/ground handling equipment required at the operational site or complex (within the selected materiel categories).

Develop budget estimates and be funded for materiel and services necessary for the logistic support of advanced weapon systems.

Supply materiel management and prime maintenance for all materiel and services peculiar to the assigned weapon system, subsystems, and related ground support/ground handling equipment. Any exceptions will be indicated by this Headquarters in the logistic concept of guidance, together with the AMA/AFD that is to be assigned supply and maintenance responsibilities.

Specialized maintenance for peculiar material and services identified  $\underline{/}$ in the preceding paragrap $\underline{h}/$ ..., subject to Hq AMC approval.

Procurement of materiel and services peculiar to assigned weapon system as delegated or approved by Hq AMC.

Training of AMC personnel as required to perform these functions.

(U) As mentioned earlier, the Headquarters, AMC decision to assign executive management responsibility for the Jupiter to MOAMA was the clincher, insofar as total management responsibilities were concerned. According to Air Force Regulation 20-10, dated 24 March 1958, 4 executive management responsibility was defined as

the state of being primarily accountable or answerable for the initiation, direction, supervision of, and results pertaining to timely actions required on any part or phase of the weapon system.\*

<sup>\*</sup> Underlining added for emphasis.



# Organizations Involved in Jupiter Management

On 12 December 1958, Major Generals Gabriel P. Disosway,\*

Ben I. Funk,\*\* and Dan F. Callahan\*\*\* signed a Memorandum of Agreement that outlined the organizational relationships and responsibilities for deploying and supporting the Jupiter. The memorandum put into proper perspective the roles of the MOAMA--its executive management responsibility as well as logistic support management. In addition, it outlined the responsibilities of the MOAMA's European managerial organization. It also outlined the responsibility of Headquarters, United States Air Force, Europe (hereafter referred to as USAFE).

Earlier, a USAF message had designated Hq USAFE as the USAF command "with overall responsibility, and the USAF point of contact overseas, for matters pertaining to all NATO IRBM programs, and other coordinating commands."

These included the Army Ballistic Missile Agency's Detachment C and the United States Association for Technical Assistance, (USAFTA), a subsidiary of Chrysler Corporation Missile Division. Detachment C represented the Army Ballistic Missile Agency at the overseas sites. The Agency, in turn, was responsible for the technical development, engineering support, and installation and checkout of the Jupiter at the installations. Also, the Agency was responsible for exercising

Deputy Commander, USAFE

<sup>\*\*\*</sup> Commander, Ballistic Missiles Center

\*\*\* Commander, Mobile Air Materiel Area



contract administration of Jupiter contracts plus the responsibility of procuring hardware and services, "including technical representatives" as stated in the inter-service agreements.

## The November 1959 Memorandum of Agreement

A year after signing the first memorandum of agreement, officials participating in the Jupiter deployment went further in outlining functions and clarifying the relationships of the various agencies. The agencies involved were the USAFE IRBM Liaison Office located at the Military Assistance Advisory Group (MAAG) in Rome, Italy; the MAAG IRBM Project Office in Rome; the JEFO located at the deployment site; the ABMA Detachment C located at the deployment site, together with the United States Association for Technical Assistance installation and checkout team; and the 7230th Technical Training Group that was also located at the deployment site.

The new agreement revealed that the various agencies would collaborate on a teamwork basis. Overall policy guidance remained the domain of the USAFE IRBM Liaison Office, representing Hq USAFE. Also, the Commander-in-Chief, USAFE, retained the command jurisdiction and control of the 7230th Technical Training Group.

The memorandum authorized direct communications between each agency and its parent command. However, the chief of each agency would effect proper coordination with the other agencies.

Also, the chief of JEFO and the MAAG IRBM project office would insure that the Chief of the USAF IRBM Liaison Office would be kept "fully informed on all matters of interest to Hq USAFE...."



The chief of JEFO, who was the theater representative of the stateside executive agent, Commander, MOAMA, would remain as the point of contact for the Chief, USAFE IRBM Liaison Office on matters relating to installation and checkout functions. In addition, he was the theater's single point of contact for the USAFE IRBM Liaison Office and the Commander, 7230th Technical Training Group in all matters associated with the AMC support of the Jupiter. 10

The commander of Detachment C and the chief of the JEFO, respectively, were designated as the "on-site representatives of the Procuring Agency /Army/ and the Requiring Agency /Air Force/." They were to carry out their functions as established under the Military Interdepartmental Procurement Regulations procedures. Also, they had to establish daily working relations and communication channels to bring the Jupiter program to an early and effective capability. 11

# Functions of Participating Agencies

According to this 1959 agreement, the USAFE Liaison Office had eight functions to perform in order to bring the Jupiter to its earliest operational capability. This office was the advance element and single point of contact of Hq USAFE in Italy. Its parent organization--Hq USAFE--was the executive agent for the Jupiter system in Europe. The liaison office was also responsible for accomplishing and monitoring of USAFE functions in the host country. Secondly, the USAFE Liaison Office had as its function the responsibility of negotiating agreements, amendments, and memoranda of understanding that involved



the host country, the U. S. Embassy, the MAAG, Hq USAFE, and JEFO.

Thirdly, it furnished JEFO with Hq USAFE policy direction on deployment matters. Also, the Liaison Office assisted the Jupiter missile squadrons and the JEFO by obtaining policy resolutions "in problem areas concerning U.S./Host Country Agreements and/or understanding." 12

The USAFE Liaison Office's fifth major function was to provide Hq USAFE with reports--periodic and special--on the status of deployment and operations in the host country. As a seventh function, the Liaison Office served as an expediter in matters concerning the deployment and operation of the Jupiter weapon system in Italy. And finally, it was the Liaison Office responsibility to provide JEFO with administrative assistance in speeding up Jupiter negotiations that were being conducted in the Rome area.

The Military Assistance Advisory Group (MAAG) was another focal point having specific functions concerning Jupiter deployment. First, it assisted the Liaison Office in establishing points of contact with the Italian Air Force. A second function was to watch closely over all actions concerned with putting into effect the USAF/IAF technical agreements. The long range objective of this function was to develop a capability to assume all normal administrative and logistical responsibilities. Another function was to collaborate with Hq USAFE in developing budget requirements. This included requirements being established in line with MAP programming instructions prior to submitting them to the Department of the Air Force for programming action and later funding action. The MAAG also furnished assistance and counsel



to the Liaison Office and the JEFO concerning the delivery and accounting for initial end items of equipment as well as follow-on material support to the Italian Air Force under MAP procedures. 13

The four remaining functions assigned to the MAAG involved the: (1) performance of normal administrative tasks associated with the putting into operation the Italian Air Force training program; (2) submission of MAAG reports; (3) controlling of the direct mission logistical support to the Italian Air Force by JEFO and the logistic support manager. This was significant to the extent that the MAAG could develop a capability in this area and put it to use after MOAMA would make the decision to withdraw the JEFO from Italy. As its final function, the MAAG was charged with monitoring the indirect mission logistics support provided to the Italian Air Force by the 7230th Technical Training Group. Thus, the MAAG would develop a capability to help the Italian Air Force obtain U. S. Air Force logistics support on USAF-furnished indirect mission equipments through MAP channels.

Heading the list of functions assigned to the 7230th

Technical Training Group was the assignment of command control of all

USAF personnel attached to the Italian Air Force IRBM Brigade.

Secondly, when emergency conditions existed, the 7230th controlled

all U. S. personnel in the deployment site area. Thirdly, the Group

served as the senior technical advisor to the Italian Air Force IRBM

Brigade Commander. As a fourth function, the Group had the responsi
bility of putting into operation at the site all USAFE policies and



objectives. Also, the Group represented the Air Force in negotiations with the Italian Air Force on base agreements. Its sixth function was to allocate on-base facilities and areas to the U. S. organizations that were assigned to the base. Additionally, the Group provided the usual base support functions -administrative, logistics, and so forth -- to U. S. personnel assigned to the IRBM base, including JEFO and ABMA personnel. The MAAG also furnished these services on an "as available basis" to CTSP\* and contractor personnel of the installation and checkout team. lastly, the Group provided supply and maintenance functions on all USAF-indirect mission items and all standard Air Force vehicles. as well as obtaining depot level logistics support through normal theater materiel channels. When the Italian Air Force attained the capability to operate and maintain all elements of the Jupiter system, the 7230th Technical Training Group, except for the Warhead Custodial Detachment, would then phase out of Italy. 15.

The JEFO functions were broad and numerous inasmuch as the Office was serving as the European theater representative of the AFJUPLO as well as representing the Mobile Air Materiel Area, which was the Zone of Interior Executive Agent. The JEFO was a local point of contact for USAFE and other theater agencies with ABMA, AFJUPLO, MOAMA, and other AMC agencies. It also provided USAF policy guidance to Detachment C on deployment matters. Also, the JEFO was responsible for coordinating for AMC on putting into effect actions required by the

<sup>\*</sup> Contractor Technical Services Personnel



USAF/IAF technical agreements. These included such actions pertaining to the facilities construction program, time phasing all of the AMC actions involved in transportation and the installation and checkout program. It was also a JEFO function to establish realistic beneficial occupancy dates for the launch positions and technical facilities, and to notify USAFE of these dates. This was significant inasmuch as timely action in this area would speed up the accomplishment of installation and checkout that would lead to the scheduled transfer of operable launch position to USAFE. Likawise, the Office was authorized to recommend changes in schedules, if the existing schedules were not feasible. 16

The Jupiter European Field Office also had the responsibility to monitor the transportation of material from the U. S. to the Italian port of entry and advising local agencies of shipping schedules, as well as following up on delayed equipment deliveries. Further, the JEFO made arrangements for transferring equipment to Italy in line with MAP procedures. It also provided command assistance to, as well as surveillance and acceptance of, the installation and checkout efforts performed by ABMA. The Office also had the responsibility for arranging the transfer of operable launch positions and technical facilities from the AMC to the Italian Air Force. 17

In the area of supply support to the Italian Air Force,

JEFO had as its function the monitoring of direct mission items, as

well as providing assistance on transaction reporting procedures. The



Office also advised the logistics support manager of problem areas in supply support as well as recommending changes as required.

According to the November 1959 agreement, the Jupiter European Field Office had these additional functions to perform:

Assists in the provision of AMC-level maintenance assistance to the missile squadrons, including technical manual and calibration services. Assists as necessary to planning for field retrofit changes and depot level maintenance services, and monitors the accomplishment thereof. Monitors and assists in the application of maintenance failure rate and consumption reporting procedures.

Arranges for AMC Technical Assistance on the Jupiter Weapon System. Technical Assistance on the Jupiter Weapon System shall be provided through Detachment C, ABMA, Technical assistance on C & E problems related to LOGBALNET operations shall be provided through in on-call service on BMC/EFO.

JEFO will begin a phased withdrawal from Italy to the country selected for deployment of the third Jupiter Squadron in accordance with the approved deployment schedule. As the Italian missile squadrons become thoroughly familiarized with the specialized aspects of the direct logistics support from the LSM, the phase-out of JEFO will be completed and the MAAG will assume the residual logistical advisory functions. (AMFEA\*\*\* will provide any AMC assistance required by the MAAG at that time).

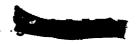
The Army Ballistic Missile Agency representative in the European theater, Detachment C, had six functions to perform in bringing the Jupiter system to its operational capability. Initially, Detachment C was responsible for the installation and checkout of the system at the deployment site. Secondly, it was responsible for providing management,

\*\*\*\* Air Materiel Force, European Area

<sup>\*</sup> Communications and electronics

<sup>\*\*</sup> Logistics Ballistics Network

\*\*\* Ballistic Missile Center European Field Office



"technical direction, supervision and acceptance of the weapon system prime contractor's efforts involved with installation and checkout." The Detachment was also responsible for providing "supplementary off-shore procurement services," if required, to support installation and checkout operations. In this area,

Detachment C assisted the United States Association for Technical Assistance installation and checkout team by furnishing procurement services through the Army's procurement offices in the theater.

Detachment C also had to certify to the Air Force<sup>20</sup>

that the installation and checkout functions have been satisfactorily performed on specified increments of the weapon system and that the specified increment is fully operable, or operable with contingencies.

The November 1959 agreement also disclosed that 21

as each specified increment of the installation and checkout effort is completed, and accepted by Detachment C,
ABMA and JEFO, personnel of Detachment C, ABMA will phase
on to the remaining increments, with those contractor
personnel earmarked for the CTSP program phasing over
in accordance with schedules approved by the 7230th Technical Training Group, to CTSP duties for assistance to
the missile squadron in operation and maintenance of
those increments which have been turned over to USAFE,
or the IAF, as the case may be.

Detachment C, ABMA, will begin a phased withdrawal from Italy to the country selected for deployment of the third Jupiter squadron in accordance with the approved deployment schedule.

Two significant contract awards in 1960 indicated that a change in the Jupiter management organization would take place. On 2 August 1960, the MOAMA awarded a letter contract to the USAFTA for the procurement and installation of a communications system in Turkey. And on 15 September, MOAMA officials awarded a letter contract to the



Chrysler Corporation Missile Division for the installation and checkout, in Turkey, of one Jupiter squadron with its supporting facilities.

This latter contract required the contractor to perform his work in accordance with Air Force quality control specifications. 22

As a result of these contractual instruments, the Jupiter management organization in Turkey differed in one respect from that used in Italy. The Jupiter European Field Office assumed all management functions previously performed by the Army's Detachment C. Thus, the Air Force had complete surveillance and control of all actions associated with installation and checkout of the Jupiter squadron in Turkey. 23



#### CHAPTER V: OPERATIONAL PLANNING

#### Introduction

(U) One of the main problems affecting Jupiter deployment was selecting and negotiating with a suitable host country. But there were significant factors involved in arriving at a suitable country selection. For instance, diplomatic uncertainties were bones of contention. Ironing out individual items in country-to-country agreements could, in themselves, become time-consuming. At the next level were problems involving Air Force - Air Force agreements. There were other problems relating to site construction, training, turning over positions to host countries, to mention only a few.

#### Negotiations with France

deployment occurred during negotiations with the French government.

In March 1958, France and the United States agreed on introducing

IRBMs for defending NATO countries. Soon thereafter, the French
government issued a statement of interest. Based on this disclosure,
the U. S. Secretary of Defense directed the USAF to initiate negotiations
with the French Air Force regarding Jupiter deployment. In early May
1958, representatives of the two Air Forces--U.S. and French--reached
a basic understanding. The fall of the French government, however,
negated these developments. One source revealed that the French
government placed Brigadier General Jacques Martin, Chief of the
French Air Force delegation that was negotiating with the USAF team,



under house arrest. It soon became apparent that succeeding governments, including General Charles DeGaulle's, were not interested in continuing these negotiations.4

### Alaska as a Possible Site

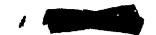
Because of this sudden change in deployment planning, the Office of the Secretary of Defense directed the Air Force to begin action for locating a Jupiter squadron in Alaska. 5 Early studies revealed that the missile system was operable under Alaskan climatic conditions. Although there was some opposition to Alaskan deployment, \*\* active planning in this area continued through September 1958, with squadron operations to begin in December of that year. However, the Air Force suspended planning for this deployment because of Italian interest in acquiring IRBMs.6

# Negotiations with Italy

Although representatives of both governments signed the Country-to-Country Agreement on 26 March 1959, diplomatic negotiations with Italy did produce some degree of progress by late 1958.8 Tentative agreement at that level disclosed that Gioia Del Colle, Barin, would be the

Another source disclosed that "French Prime Minister Pflimlin's Government ordered General Martin and the FAF's Air Deputy, Lieutenant General Andre Challe, into forced retirement. General Paul Ely, Chairman of the French Chiefs of Staff, resigned in protest against their removal."

<sup>(</sup>S) According to SAC Historical Study No. 72, "Participation in the Missile Program, 1 January 1958 - 30 June 1958, Chapter I, p. 30, "CINSAC, however, entertained strong reservations about deploying a Jupiter squadron to Alaska and believed that to do so would be a grave mistake. He recommended that it be deployed in Italy, in lieu of France, and if deployment to either place was impossible, not to deploy it at all."



for the first squadron; Foggia, Gina Lisa, would be the location

\*
for the second squadron. Although this was an indication of progress
leading to deployment, it became more apparent that actual deployment
in the initial stages would not meet the Department of Defense scheduled
date of December 1958. In acknowledging this delay, Headquarters
USAF established a "sliding date" for deployment; in effect, Air Force
officials stated that the first squadron deployment would be "60 to
120 days following final government approval of an IRBM agreement."

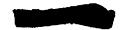
Final government approval of an IRBM agreement, however, required signing technical \*greements between the two Air Forces. Of necessity, USAF officials had to retain flexibility in the sliding "M" day concept because of the extended time required to get the USAF/IAF technical agreements signed. Major problems involved the substitution of common items that could be produced in Italy and reimbursing the host country for off-shore procurement. State Department officials and Department of the Air Force representatives, however, agreed to buying common items in the host country. The Air Force, at this time, wanted to determine if the Italian industry could provide locally procured items in time to support the Jupiter program. In those areas where the host country could support the program, they should be allowed; and in those areas where the local industry could not support the program, the USAF would supply the items until the Italian industry developed its capability to do so. 10

<sup>\*</sup> By June 1959, officials had agreed to use the single RIM complex. This eliminated Foggia as a Jupiter squadron site.





deployment planning when they signed the Technical Agreement on 10 August 1959. 11 Previously, USAF officials had hoped that the technical arrangements would have been signed by 1 April 1959. But Italian insistance that funding problems be resolved before proceeding with other discussions was the key factor in delaying the technical agreement. Operational planning, heretofore based on "flexible schedules," could now be pinpointed with a greater degree of accuracy. 12



## CHAPTER VI: INSTALLATION AND CHECKOUT

#### Italy

### Corrosion -- A Problem of the First Magnitude

Shortly after the Air Force signed the technical agreements with the Italian Air Force and material deployment started,\* corrosion--its prevention and control--became a problem of the first magnitude. Officials at the site in Italy reported that some equipment was arriving from the United States "in an unclean and corroded condition." In order to solve this problem, as well as to improve the over-all quality control program, the MOAMA Commander sent local specialists to Italy to review the quality control programs of the JEFO, Detachment "C", and the USAFTA. Meanwhile, site officials took prompt action in combating the corrosion problem. They increased the installation and checkout team by adding approximately 50 persons to the work force. Their duties were to correct the existing corrosion and perform preventive maintenance to preclude recurrence of corrosion.

(U) Shortly after returning to the MOAMA, one specialist noted that two significant facts concerning organization structure, as they applied to quality control, were important to Jupiter installation and checkout. First, Detachment "C" was responsible for the contractor's quality control efforts. To perform this function, Detachment "C" had a chief and one inspector, assisted by three USAFTA personnel. The MOAMA official noted that the basic quality control effort exerted by Detachment "C" was a spot check of the contractor's operations "based upon inspection instructions and checkout procedures." 5

<sup>\*</sup> By March 1962, the MOAMA had shipped or monitored the shipment of approximately 30,638,500 pounds of materiel in support of the SM-78 weapon system. There were no late arrivals at deployment sites. (See Appendix A).



A second significant fact was that the JEFO quality control responsibility was established under the weapon system acceptance plan "to observe checkouts of increments of the weapon system when ready for presentation by Detachment 'C'."

The MOAMA quality control specialist also learned that the contractor's efforts in other areas were inadequate. Inadequacies were found in the following areas: (1) calibration program; (2) modification controls; (3) the correct documentation of acceptance of non-conforming materials; (4) an effective preventive maintenance program on Government Property; and finally, reporting of unsatisfactory receipt of material. 7

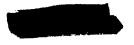
Effective coordination between officials of the JEFO,

Detachment "C", and USAFTA assisted the MOAMA in solving many of
the corrosion problems that were developing at Brookley AFB. Shortly
before returning to Headquarters, MOAMA, the quality control official
obtained a listing of all discrepancies that had been detected which
might be eliminated on equipment at Brookley earmarked for overseas
shipment.

The degree of success in reducing corrosion on material being shipped from Brookley by water became a matter of record in December 1960.

Two months earlier, a MOAMA inspector accompanied material shipped to Italy and Turkey. During this trip the inspector kept records on the

<sup>\*</sup> These significant facts could have influenced local officials to negotiate for a contract with CCMD for installation and checkout efforts in IBRAHIM II in order to gain positive control in accordance with Air Force quality control procedures.





condition of the cargo. After the material had been unloaded and inspected, the MOAMA inspector requested of his NATO I counterpart a statement concerning the condition of the cargo. According to the trip report, the material "was received in excellent condition and better than any heretofore received."

## Bad Weather is a Factor

Jupiter deployment in Italy. Strong winds damaged the Pentadome.

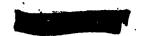
This temporary air-filled structure, used for storage, sustained damage on two occasions. Officials then decided to deflate the Pentadome and return it to the United States.

And in February 1961, high winds toppled and severely damaged missile 214 at Launch Position IV.

Excessive rainfall delayed construction work in the Ground Support Equipment staging area. At one time, this area was "a sea of mud eight to ten inches deep." Because of this condition, the contractor had to apply more rock fill, adding to the time spent in construction. 12

## Launch Position I

In early March 1960, installation and checkout personnel began processing equipment through the Interim RIM for this position. They gained partial access to one of the three emplacements on 8 May and complete access to the entire position during the first week in June. However, they were unable to gain earlier access because of the "contractor's refusal to let the I & C Team on the construction currently with him." Because of these delays in gaining accessibility, the originally programmed turnover date of 1 June for this position was rescheduled for 11 July 1960.



Installation and checkout personnel met this turnover date. However, they had a total of 85 waivers on work they had not completed. None of these affected the operational capability of the position. It must be noted that many of these waivers were issued because parts were not available at that time. Also, that personnel required some of these parts at other positions. With the removal of the last waiver in January 1961, Launch Position I was in a "clean" configuration.

Launch Position II

The USAFTA team gained limited access to this launch position in mid-June 1960. Full access was scheduled to occur on the revised programmed date of 1 July, with eventual transfer to the Italian Air Force slated for 1 September of that year.

However, a series of misfortunes occurred that upset these plans. On 11 August, the missile battery in missile 206 exploded, causing officials to put in a replacement Jupiter. During the installation of the replacement missile, it sustained damages, causing officials to put in a third missile.

Consequently, planning officials were compelled to reforecast the transfer date, which they changed to 5 October 1960. But again, another incident occurred. On 5 October, with practically all check-out procedures completed, the explosive bolts on missile 209 detonated. This caused yet another delay, since Headquarters, USAFE directed that all electrical systems tests were to be suspended at all launch positions until the determining cause of the detonation could be identified.

At this time, Air Force officials then decided to transfer this position to the Italian Air Force on an "inventory only" basis



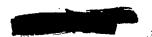
on 17 October. The reason for this action was to allow the installation and checkout team to perform its task at Launch Position IV. After completing their work at number four, the team planned to return to Launch Position II to complete their work.

By November 1960, USAFTA engineers had isolated and corrected the battery explosion problem. But other problems emerged during that month and the next. Moisture seepage appeared to seriously endanger the reliability of the weapon system. Consequently, many solutions were used. Perhaps the most effective corrective action required the covering of all cable connectors with a plastic type compound.

In early January 1961, the installation and checkout team returned to Launch Position II. Their first project was to commence recalibration and requalification work. But much of this work was being performed in the Interim RIM. In order to keep up their productive efforts, the team returned to Position IV to get it ready for transfer to the Italian Air Force.

But they encountered delays at Position IV. In early
February 1961, high winds damaged missile 214. Thus, the team
could not return to Position II until late March. Finally, they
were able to effect transfer on 26 April 1961. At that time only
13 waivers were outstanding, but these were corrected by late May. 14
Launch Position III

This position was the fifth in order of installation and was programmed for transfer to the Italian Air Force on 1 December 1960. During the middle of October 1960, personnel commenced moving equipment to that area.



Launch Position II affected the progress at number three. These included the corrosion problems, with the time needed to devise corrective action; the battery explosion problem with the time needed to devise corrective action; the battery explosion problem with the time needed to devise corrective action; the battery explosion problem with the subsequent suspension of electrical systems tests. In addition, there was the corresponding delay caused by the explosive bolts on missile 209 at Launch Position V. To further complicate matters, the installation and checkout team assigned to Launch Position III was also responsible for performing the same tasks at Launch Position V.

Corrosion, however, reared its ugly head in another place-this time in the rocket engine on missile 210. USAFTA personnel
removed this Jupiter from the launch position and transported it to
the RIM for corrective action. In mid-February 1961, they returned
the missile to the position. At this time, they reforecast the
transfer date of the launch position to 5 April 1961.

One other problem occurred that delayed the transfer until 14 April. This was the chore of purging the hydraulic system of one of the missiles located at the position. At the time of transfer, installation and checkout personnel had only nine waivers outstanding, and they completed them in late May 1961. 15

## Launch Position IV

This was the fourth of ten positions in the series of installation. During the middle of September 1960, personnel started moving equipment to the site. At that time, planners believed the





USAF could transfer the position to the Italian Air Force on

1 November 1960. However, the problems the installation crews
coped with at positions two and five caused officials to reforecast the transfer date to 8 December 1960.

December. But at that time the solution for correcting the moisture problems caused planners to extend the turnover date to 20 January 1961. When it appeared that the installation and checkout team would meet this date, excessive work that was not expected was required to replace many cables. Again, planners extended the transfer date to 8 February.

But on the night before the transfer would become effective, bad luck struck again. High winds "estimated in the vicinity of 45 to 50 knots with gusts up to 60 knots" toppled missile 214 to the ground. The installation and checkout personnel installed another missile. This unfortunate incident caused the Air Force to again reschedule the transfer date to become effective on 10 March 1961.

Technical problems—this time in the vernier engines of the three missiles as well as troubles in the main distributors—caused an additional delay. Finally, the Air Force transferred the position to the Italian Air Force on 24 March 1961. At that time, only nine waivers were outstanding and these were corrected by early June 1961.

## Launch Position V

The fifth position was the third in the sequence of installation. On 1 August 1960, USAFTA personnel gained partial accessibility to





the position and full access on 15 August. At that time they expected to have the position ready for transfer to the Italian Air Force on 1 October.

Installation and checkout progress slackened somewhat because of a shortage in liquid nitrogen, as well as failures in hydraulic lines. Coupled with these problems was the previously mentioned incident that occurred on 4 October 1960--the explosive bolts on missile 209 detonated, thus causing additional delay. Crews installed another missile at the emplacement. Consequently, these problems caused planners to revise their programmed transfer date, earmarking it for 23 November 1960.

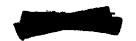
By late November, the crews had finished the acceptance inspections on two of the systems, but other problems developed. Moisture accumulated in the top center separation box and the fuel transporter fuel supply panel. At the time this happened, a panel in the launch control trailer failed.

Because of the time required to correct these discrepancies, actual transfer of the position did not take place until 13 February 1961. Only seven waivers existed on the position at the transfer time. Installation and checkout specialists corrected them during the first week in May 1961. 17

## Launch Position VI

This position was the eighth in the order of installation and checkout operations. In early April 1961, equipment commenced moving to the site. At that time, plans indicated that the Air Force would transfer the position to the Italian Air Force on 1 June 1961.





Personnel were able to accomplish only limited operations during the first week because they were performing acceptance inspections at Launch Position III. Thus, they attained full strength at number six one week behind schedule. The one week delay in performing acceptance inspections at Launch Position III caused a corresponding delay in the schedule for this position. However, the Air Force transferred the position to the Italian Air Force on 7 June 1961.

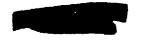
Of significance was the fact that at the time of the transfer, no waivers existed on this position. This was the first position to be transferred to the Italian Air Force with no work orders outstanding. 18

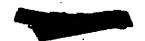
#### Launch Position VII

Launch Position VII was programmed as the sixth in the installation and checkout line. The technical problems that existed at other positions caused planners to reforecast the transfer date of this position. Accordingly, they reprogrammed the transfer date to become effective on 15 March 1961. However, the team was able to complete its work ahead of schedule and the Air Force transferred the position to the Italian Air Force on 3 March 1961, twelve days sooner than they had planned. Twenty waivers on this position existed at the time of transfer but installation and checkout personnel completed these in May. 19

# Launch Position VIII

This position was the ninth in the series of installation and checkout operations, with a transfer date programmed for 30





June 1961. In early April personnel started moving equipment to the site and RIM personnel performed the installation work.

This was a change in the usual operations but was necessary because the three checkout teams were working at other positions.

Of particular interest was the fact that this position was about 55 miles from the base at Gioia del Colle. Thus, transportation and logistics could possibly develop into problem areas.

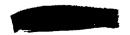
On 26 April, when the regular checkout team completed its work at Launch Position II, they moved to this position. Checkout operations proceded rapidly and the Air Force transferred the position to the Italian Air Force on 13 June 1961. This was accomplished 17 days before the programmed date. No work orders were on record for the site at the time of the transfer.<sup>20</sup>

## Launch Position IX

Launch Position IX was seventh in the series slated for installation and checkout operations. Personnel began moving equipment to the site in early March 1961. The installation and checkout team experienced no problems and met the scheduled transfer date of 29 April 1961.

## Launch Position X

Planners had decided earlier that Launch Position X would be the last in the order of installation and checkout, with a transfer date established as 30 June 1961. USAFTA personnel completed their tasks in rapid time and the Air Force transferred the position to the





Italian Air Force on 20 June 1961, ten days ahead of the programmed deadline. In addition, they transferred the position in a "clean" configuration, since there were no waivers on the position. 22

#### Turkey

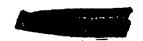
### Launch Position II

According to plans, USAFTA personnel were to occupy this launch position on 1 August 1961. They gained initial access, however, on 21 August. Complete access to the revetment area, as well as the second and third emplacements did not materialize until the end of the month.

Installation activity at the site did not progress as rapidly as USAFTA had planned. In the first place, the cleaning shop did not deliver the liquid oxygen and liquid nitrogen lines as scheduled. Secondly, vernier engines did not arrive from the United States according to the planned schedule. On one occasion USAFTA personnel had to install a vernier engine at the site rather than in the maintenance shop because the engine was not available when the missile was in the shop. Also, USAFTA personnel had to delay moving the other two missiles because of the late arrival of vernier engines. And finally, the power distribution hut arrived late from the United States, causing further delays.

Nevertheless, USAFTA personnel transferred Launch Position II to the Air Force on 31 October 1961, the programmed date. At the time of transfer the Air Force had issued only eleven waivers and eleven deferred maintenance items on the position. 23





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#### Launch Position III

This position, originally programmed to be the third in order of installation, became the second because of site construction problems. Original plans had established the occupancy date as 1 September 1961. USAFTA, however, did not gain access until 26 September.

In October two missile incidents occurred that slowed down installation and checkout operations. While crews were checking out missile 317, its missile battery activated and burst. This contaminated the instrument compartment.

The second incident involved missile 318 while it was at the site. A bullet pierced the missile's skin and struck the rocket engine's throat area. Crews in the maintenance shop repaired the skin damage, but they had to obtain a spare engine from the Air Force Weapon Supply to replace the damaged engine.

In order to accelerate operations at the site, installation and checkout personnel moved in two spare missiles and sent the damaged ones to the maintenance area for repairs.

USAFTA personnel, however, transferred Launch Position to the Air Force on 28 November 1961, two days before the programmed date.

## Launch Position IV

Because of construction difficulties at this position,

USAFTA crews gained only partial accessibility, but it was delayed

from 1 November until the seventh of the month. These construction

problems also retarded access to the second emplacement until 20





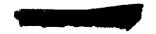
November and to the third emplacement until the 28th of the month. In addition to those difficulties at the site itself, construction problems postponed occupancy of the crew ready building until late December 1961. To overcome this delay, the contractor moved ten house trailers to the site. Installation and checkout personnel used these quarters until the launch position was ready for transfer.

The contractor's crews expended great effort to complete work at this position, working on an extended shift basis for six days per work. And on 21 December 1961, they transferred Launch Position IV to the Air Force. At that time, there were only two waivers and nine deferred items written on the DD 250 Forms. 25

Although contractor personnel did not gain complete access to the position until 27 December, they were able to begin their work at the first and second emplacements on 1 and 7 December, respectively.

Fearing that the access road would become impassable if bad weather arrived, personnel started moving equipment to the area on 1 December. This operation continued during the first three weeks of the month.

Installation and checkout operations continued at a steady pace. The contractor's crews transferred the position to the Air Force on 23 January 1962. When this event occurred, the





Air Force had issued only four waivers and 17 deferred maintenance items on the position.  $^{26}$ 

### Launch Position V

Jupiter deployment was nearing a successful climax when USAFTA personnel gained access to this, the last, Jupiter launch position during the final week of December 1961. Equipment moved to all three emplacements during January.

Installation and checkout operations, however, did not move as smoothly as anticipated because of the non-availability of some equipment. Shortages existed for gyros for the ST-90's. Installation personnel also needed one fuel transfer line and one theodolite. These items became available in sufficient time to complete installation and checkout operations.

USAFTA crews completed this work before the programmed deadline. They transferred Launch Position V to the Air Force on 26 February, although the DD 250 acceptance forms were not signed until 28 February. The Air Force pointed out only 19 waivers on this, the last Jupiter launch position.<sup>27</sup>

## Summary of Installations and Checkout Efforts in Turkey

Documentary evidence of operations in Turkey clearly depict the rugged terrain where the Jupiter squadron is deployed. Therefore, the causes for most construction delays are evident. In planning an installation and checkout program such as this one, it naturally follows that delays in any one of a series of operations will cause corresponding delays in subsequent phases.





Practical application of lessons learned in Italy caused installation and checkout operations to move at a better pace in Turkey. Although problems did occur, solutions seemed to come more quickly at IBRAHIM II.

Of significance is the fact that the contractor, USAFTA, "completed the installation and checkout of a complete tactical weapons system within the originally planned and scheduled time frame."28

Thus, the MOAMA completed its role in the installation and checkout of the Jupiter. There were other areas of significance, particularly with respect to logistic support of the system as authorized by AF Manual 67-1. According to Vol. XXIII of this manual, MOAMA had the responsibility of maintaining the weapon system storage site at which a complete range of all direct mission support items are stocked for automatic resupply. Subsequent studies will reveal the role of this headquarters in the logistic support of the system. <sup>29</sup>



#### CHAPTER I - FOOTNOTES

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- 2. David S. Akens <u>Historical Origins of the George C.</u>

  <u>Marshall Space Flight Center p. 14.</u> MOAMA Historical Archives. Hereafter referred to as "Historical Origins".
- 3. Memorandum, Secretary of Defense Charles E. Wilson, to Members of the Armed Forces Policy Council, 26 November 1956, subject: Clarification of Roles and Missions to Improve the Effectiveness of Operation of the Department of Defense. Document Number 1.
- 4. Major Decisions Affecting Jupiter Program. About 1 December 1958. Document Number 125A.
- 5. Jupiter Quarterly Report for Second Quarter CY-61. Page 15. Document Number 189.
- 6. Ibid.
- 7. Ibid.
- 8. "Historical Origins", page 14.
- 9. Major Decisions Affecting Jupiter Program; Document Number 125A.
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   Document Number 189.
- 11. Major Decisions affecting Jupiter Program; Document Number 125A.
- 12. De Haven "History of AMC Participation in the Air Force Ballistic Missiles Program, January-June 1958", Part II. App. B., page 13 MOAMA Historical Archives.
- 13. <u>Ibid.</u>, pages 16-17.
- 14. <u>Ibid.</u>, page 19.
- 15. Jupiter Program Chronology; page 2. Prepared by Historical Office, AFSC for Aerospace Systems. MOAMA Historical Archives.
- 16. Ibid.
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- 20. Ibid.
- 21. Ibid.
- 22. History of the Mobile Air Materiel Area, 1 July 1957 30 June 1960. Volume II, page 177. MOAMA Historical Archives.
- 23. Jupiter Program Chronology, page 3.
- 24. Ibid.
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- 27. Ibid.
- 28. "Historical Origins", page 16.
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- 33. Ibid.
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- 35. Ibid.
- 36. <u>Ibid.</u>, page 4.
- 37. Ibid.
- 38. Ibid.
- 39. Ibid.
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- 41. Ibid.

- 42. <u>Ibid</u>., pages 4-5.
- 43. <u>Ibid.</u>, page 5.
- 44. MOAMA presentation @ Hq AMC on 6 March 1961. MOAMA Historical archives.
- 45. Ibid.
- 46. Ibid.
- 47. <u>Ibid</u>.
- 48. Ibid.
- 49. Ibid.
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- 52. <u>Ibid</u>., page 6.
- 53. <u>Ibid</u>.
- 54. Ibid.
- 55. MOAMA presentation on SM-78 at Hq AMC by Mr. Duke, 6 March 1961. MOAMA Historical Archives.
- 56. Jupiter Program Chronology, page 6.
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- 60. <u>Ibid</u>.
- 61. <u>Ibid.</u>, page 7.
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- 68. Ibid.
- 69. Ibid., pages 7-8.
- 70. Ibid.
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- 76. <u>Ibid</u>., page 9.
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- 79. Ibid.
- 80. Ibid.
- 81. Jupiter Progress Report, April 1959, pages 1-2, MOAMA Historical Archives.
- 82. Jupiter Progress Report for May 1959, page 2-3, Document Number 138.
- 83. Jupiter Progress Report, April 1959, page 3, MOAMA Historical Archives.
- 84. Jupiter Progress Report, May 1959, page 1, Document Number 138.
- 85. <u>Ibid.</u>, pages 1-2.
- 86. <u>Ibid.</u>, page 3.
- 87. Jupiter Progress Report, June 1959, page 5, Document Number 140.
- 88. Ibid.
- 89. Jupiter Progress Report, July 1959, page 2, Document Number 142.

- 90. Jupiter Progress Report, August 1959, page 4, Document Number 146.
- 91. <u>Ibid.</u>, page 1.
- 92. Jupiter Progress Report, September 1959, page 1-2y-Dpdument Number 151.
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- 94. Jupiter Progress Report, October 1959, page 3, Document Number 152.
- 95. Ibid., page 1.
- 96. Ibid., page 1.
- 97. Ibid., page 1.
- 98. Jupiter Progress Report, December 1959, page 1, Document Number 155.
- 99. Jupiter Progress Report, November 1959, page 8, Document Number 154.
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#### GLOSSARY OF ABBREVIATIONS

ABMA Army Ballistic Missile Agency

Admin. Administration

AEC Atomic Energy Commission

AF Air Force
AFB Air Force Base

AFBMD Air Force Ballistic Missiles Division
AFJUPLO Air Force Jupiter Liaison Office

AFJUPLO Air Force Jupiter Liaison Off
AFM Air Force Manual

AFR Air Force Regulation
AFSC Air Force Specialty Code

Afr Force Systems Command
AFSD Air Force Shipping Directive
AFW Air Force Weapon Supply Account

AMA Air Materiel Area

AOMC Army Ordnance Missile Command

ARDC Air Research and Development Command
ARGMA Army Rocket and Guided Missile Agency

ATC Air Training Command

BM Ballistic Missile(s)
BMC Ballistic Missiles Center
BOD Beneficial Occupancy Date

CCMD Chrysler Corporation Missile Division

CINC Commander-in-Chief

CINSAC Commander-in-Chief of the Strategic Air Command
CINCUSAFE Commander-in-Chief of the United States Air

Force in Europe

Cmdr. Commander
Contr. Contract(or)

CONUS Continental United States
CPE Circular Probable Error

C/S Chief of Staff

CTL Combat Training Launch

CTSP Contractor Technical Services Personnel

D/A Department of the Army

DD Defense Department; Deputy Director

Def. Defense

DF Disposition Form
DOD Department of Defense

EFO European Field Office

EMR Executive Management Responsibility

FAF French Air Force

FICO Ford Instrument Company

GFE Government-furnished Equipment G.O. General Order GSE Ground Support Equipment TAF Italian Air Force T and C Installation and Checkout IBRAHIM IT Another Recipient of Jupiter Missiles TOC Initial Operational Capability TRBM Intermediate Range Ballistic Missile(s) TWST Integrated Weapon System Training JUSMMAT Joint U. S. Military Mission for Aid to Turkey Log. Logistic(s) LOGBALNET Logistics Ballistic Network LOX Liquid Oxygen L.SM Logistic Support Manager LST Live System Test(ing) Ltr. Letter MAAG Military Assistance Advisory Group MIPR Military Interdepartmental Purchase Request MOAMA Mobile Air Materiel Area Missile Out of Commission for Parts MOCP Msg. Message NAA North American Aviation NATO North Atlantic Treaty Organization OGMS Ordnance Guided Missile School ORD Operational Readiness Date OSD Office of the Secretary of Defense 0 & M Operation and Maintenance PA Procurement Authorization POAE Port of Aerial Embarkation POD Port of Debarkation POE Port of Embarkation PPB Provisioning Parts Breakdown Prog. Frogram Proj. Project R & D Research and Development RIM Missile Receipt, Inspection, and Maintenance Building SAC Strategic Air Command SAC-MIKE Short Title for the Strategic Air Command Headquarters Element Located with the Air Force Ballistic Missiles Complex in Los Angeles. SBAMA San Bernardino Air Materiel Area SMS Strategic Missile Squadron

Special

Spec.

TAF TTS

TUSAFG

TUSLOG

UAL U. S.

USAF USAFE

USAFE-ADVON

USAFTA

WSECL WSOCP WSSS Turkish Air Force

Technical Training Squadron Turkey/US Air Force Group Turkey/US Logistics Group

Unit Allowance List

United States

United States Air Force

United States Air Force in Europe

United States Air Force in Europe Advanced Echelon

United States Association for Technical Assistance

Weapon System Equipment Component List Weapon System Out of Commission for Parts

Weapon System Storage Site

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MOAMA Historical Archives

Headquarters, Air Force Logistics Command Historical Division Archives

## APPENDIX A

SHIPMENTS - - AIR AND SURFACE

DESTINATION	DATE	•	UFTCUT
IZMIR, TURKEY			WEIGHT
IZMIR, TURKEY	JUNE	1961	55,000
IZMIR, TURKEY	AUGUST	1961	84,000
IZMIR, TURKEY	SEPTEMBER		62,000
IZMIR, TURKEY	OCTOBER	1961	47,000
IZMIR, TURKEY	NOVEMBER	1951	64,000
IZMIR, TURKEY	DECEMBER	1961	104,000
	JANUARY	1962	18,000
			434,000
TARANTO, ITALY	JULY	1060	
TARANTO, ITALY	SEPTEMBER	1960	80,000
TARANTO, ITALY	OCTOBER	1960	110,000
TARANTO, ITALY	NOVEMBER		14,000
TARANTO, ITALY	DECEMBER	1960	41,000
TARANTO, ITALY	FEBRUARY	1960	56,000
TARANTO, ITALY		1961	50,000
TARANTO, ITALY	MARCH	1961	42,000
TARANTO, ITALY	APRIL	1961	14,000
TARANTO, ITALY	JULY	1961	13,000
•••, ••••	OCTOBER	1961	22,000
			442,000
CAPE CANAVERAL, FLA	AUGUST	1960	47,000
CAPE CANAVERAL, FLA	JANUARY	1961	26,000
CAPE CANAVERAL, FLA	MAY	1961	
CAPE CANAVERAL, FLA	SEPTEMBER		25,000
CAPE CANAVERAL, FLA	JANUARY	1962	25,000
			<u>26,000</u>
			149,000

MISCELLANEOUS SPECIAL MISSION AIRLIFT TO VARIOUS DESTINATIONS IN SUPPORT OF THE SM-78 MISSILE OVER A PERIOD FROM JANUARY 1960 to MARCH 1962. -----160,000 POUNDS.

## SURFACE SHIPMENTS

VESSEL	DESTINATION	SAILING DATE	<u>WE IGHT</u>	M/T	<u>L/T</u>	CUBE
SS MAYO LYKES SS TILLIE LYKES SS PALMETTO STATE SS GEORGE LYKES SS ALMERIA LYKES	TARANTO, ITALY TARANTO, ITALY TARANTO, ITALY TARANTO, ITALY TARANTO, ITALY	OCTOBER 1959 NOVEMBER 1959 DECEMBER 1959 DECEMBER 1959 MARCH 1960	1,396,596 2,828,701 2,831,505 2,153,192	3951 6873 6141 5499 6799	623 1263 1264 961	158,042 274,930 245,656 219,911
SS LIPSCOMB LYKES SS ZOELLA LYKES SS ALMERIA LYKES SS HARRY CULBREATH	TARANTO, ITALY TARANTO, ITALY TARANTO, ITALY TARANTO, ITALY	MAY 1960 JULY 1960 OCTOBER 1960 JANUARY 1961	2,661,481 1,909,809 1,867,499 2,308,499 1,955,962	5035 5113 5971 3957	1188 853 834 1031 <u>873</u>	271,967 201,409 204,506 238,854 158,264
			19,913,244	49339	88 <b>90</b>	1,973,539

## SURFACE SHIPMENTS

VESSEL	DESTINATION	SAILING DATE	WEIGHT	M/T	<u>L/T</u>	CUBE
SS ZOELLA LYKES SS NORTHWESTERN	IZMIR, TURKEY	APRIL 1961	348,904	1322	156	52,869
VICTORY	IZMIR, TURKEY	APRIL 1961	2,004,130	3735	895	149,419
SS DOCTOR LYKES	IZMIR, TURKEY	MAY 1961	2,224,205	5830	993	233,192
SS REMSEN HEIGHTS	IZMIR, TURKEY	JUNE 1961	1,505,256	4067	672	162,684
SS GREEN VALLEY	IZMIR, TURKEY	AUGUST 1961	1,420,801	<b>3</b> 834	634	153,371
SS SOLON TURMAN	IZMIR, TURKEY	SEPTEMBER 1961	2,037,028	<u>5278</u>	909	211,100
			9,540,324	24066	4259	962,635

#### APPENDIX B

STATUS OF FUNDS EXPENDED

BY

DEPARTMENT OF THE ARMY AND

AMOUNTS REIMBURSED BY

THE AIR FORCE

BY

FISCAL YEAR

## STATUS OF FUNDS BY FISCAL YEAR (1956)

## JUPITER PROGRAM

As of 30 June 1961

(In millions of Dollars)

		Funds Programmed	Allocations	Reserved For Future Allocations	Cumulative Commitments	Cumulative Obligations	Cumulative Expenditures
ARMY							
R&D, P&P,		10.72 29.00	10.72 29.00	0 <u>0</u>	10.69 28.82	10.69 28.82	10.69 28.82
	Total	39.72	39.72	0	39.51	39.51	39.51

<sup>(1)</sup> Includes major facilities

## STATUS OF FUNDS BY FISCAL YEAR (1957)

#### JUPITER PROGRAM

As of 30 June 1961

(In Millions of Dollars)

	Funds Programmed	Allocations	Reserved For Future <u>Allocations</u>	Cumulative Commitments	Cumulative Obligations	Cumulative Expenditures
ARMY						•
R&D, A	25.00	25.00	0	24.71	24.71	24.71
P&P, A(1)	115.88	115.88	0 -	114.57	114.57	114.57
MCA	25.00	25.00	<u>o</u>	23.46	23.46	23.46
Total	165.88	165.88	ο .	162.74	162.74	162.74

<sup>(1)</sup> Includes Nitrogen Transfer System @ .378 and Rail Transfer System @ .350.

## STATUS OF FUNDS BY FISCAL YEAR (1958)

### JUPITER PROGRAM

As of 30 June 1961

(In Millions of Dollars)

	Funds Programmed	Allocations	Reserved For Future Allocations	Cumulative Commitments	Cumulative Obligations	Cumulative Expenditures	MIPR's Recd	Reim- bursement by AF
ARMY								
R&D, A	48.80	48.80	0	48.67	48.67	44.53	0	0
P&P, A	80.00	80.00	0	77.84	77.84	77.84	0	0
P&P, A (IOC)	(1)202.70	202.70	0	202.35	202.35	198.86	202.70	202.70
MCA	1.20	1.20	<u>0</u>	1.11	1.11	1.09	0	0
Total	1 332.70	332.70	0	329.97	329.97	322.32	202.70	202.70

<sup>(1)</sup> AF responsibility for reimbursement includes FY 58 IOC only and all FY 59 and FY 60 Programs.

### STATUS OF FUNDS BY FISCAL YEAR (1959) (1)

### JUPITER PROGRAM

As of 30 June 1961

(In Millions of Dollars)

	Funds Programmed	Allocations	Reserved For Future Allocations	Cumulative Commitments	Cumulative Obligations	Cumulative Expenditures	MIPR's Recd	Reim- bursement by AF
ARMY								
R&D, A PEM, A(2	26.00 206.89	26.00 206.89	<u>0</u>	26.00 206.89	26.00 206.89	26.00 201.60	26.00 206.89	26.00 192.58
Total	232.89	232.89	0	232.89	232.89	227.60	232.89	218.58

- (1) AF responsibility for reimbursement includes FY 58 IOC only and all FY 59 and FY 60 Programs.
- (2) PEM, A Procurement of equipment and missiles, Army, formerly P&P, A.
- (3) Includes \$.200 retained by OCO for overseas distribution.
- (4) AF MIPR's received are itemized by Program Budget codes as follows:

P-131	\$138.023	P-260	\$ .722
P-140	6.968	P-432	.605
P-220	.238	P-438	.665
P-244	54.124	P-443	1.346
		P-4 <b>5</b> 8	.951
P-250	3.251	P-621	26.000
	TOTAL	\$232.893	

### STATUS OF FUNDS BY FISCAL YEAR (1960)

#### JUPITER PROGRAM

As of 30 June 1961

(In Millions of Dollars)

	Funds Programmed	Allocations	Reserved For Future Allocations	Cumulative Commitments	Cumulative Obligations	Cumulative Expenditures	AF MIPR's	Reim- bursement by AF
ARMY								
PEM, A	99.86 (2)	99.86	0	99.86	99.86	95.88	99.86	73.01

Funds approved by OSD/BMC do <u>not</u> include funds programmed within AF O&M accounts; however, Funds Programmed and Allocations do include these AF O&M amounts.

- (1) All "Expenditures" are estimates since the fiscal system does not provide this data at the program level.
- (2) Includes \$.222 retained by OCO for overseas distribution.
- (3) AF MIPR's received are itemized by Program Budget codes as follows:

P-220	\$ 5.154	P-413	\$045
P-230	77.417	P-431	0
P-270	12.364	P-432	.038
P-408	.448	P-438	0
P-411	1.805	P-443	1.604
		P-458	.985
		400 010	

TOTAL \$99.860

### STATUS OF FUNDS BY FISCAL YEAR (1961)

#### JUPITER PROGRAM

As of 30 June 1961

(In Millions of Dollars)

	Funds Programmed	Allocations	Reserved For Future Allocations	Cumulative Commitments	Cumulative Obligations	Cumulative Expenditures	AF MIPR's	Reim- bursement by AF
ARMY	,							
PEMA, A	9.17 (1)	9.17	0	9.17	9.17	7.22	9.17	5.00

(1) Includes \$6.696 financed by suballotment from OCO and \$2.474 to be financed through local IAF.

AF MIPR's received are itemized by Program Budget Codes as follows:

P-443 4.879 P-408 .161 P-690 .439 P-2010 3.691 9.170